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**Requisites of Architectural Languages
in the Case of Scientific Types of Design
Procedures**

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Requisites of Architectural Languages in the Case of Scientific Types of Design Procedures

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Abstract

The paper belongs to the area of interest of 'Architectural theory'.

As architects know, for producing projects of architecture there are two series of types of design procedures: the 'ideological (experimental)' one, and the 'scientific (non-experimental)' one. More or less connected with this double series of types of design procedures, there are two series of kinds of projects of architecture.

Every type of design procedure needs the adoption of components of the most suitable architectural language.

In general 'ideological' types of design procedures aim at pursuing 'innovating' solutions on the plane of content and above all on the plane of expression, while 'scientific' types of design procedures aim at pursuing 'already known' solutions on the plane of content as well as on the plane of expression.

How these two statutory aspects condition the requisites of the various architectural languages? The paper will deal with the requisites of architectural languages in the case of 'scientific' types of design procedures, by using a semiotic terminology.

For 'scientific' types of design procedures too the definition of appropriate architectural languages mainly depends on the architect's capability of controlling the play among 'degrees of freedom' and 'constraints'. This play involves differently the plane of content and the plane of expression.

The paper will try to outline the effects of this play in the 'linguistic' order and the 'discursive' order, which constitute every architectural language.

The topic points of the paper will be explained by means of disciplinary examples.

The paper will be integrated by a short bibliography.

Keywords: architectural language, types of design procedures

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Introduction

The approach to the subject of the paper *presupposes* a sign to the relationships among types of design procedures and architectural languages. It seems not superfluous to specify that the approach in question suspends the canonical notion of ‘architecture’ in front of the necessity of re-thinking it.¹ Such a suspension invests of course the same notion of ‘theory’, still to-day considered by architects and critics as direct ‘complement’ of the practice of architecture.

Most part of architects work successfully by ignoring the notion of ‘design procedure’ and its applications. Some of them at the most try to follow ‘methods’ still partially inspired by the Modern Movement’s culture. The residual part of architects shows two opposite attitudes towards this notion. Some of this minority think that architectural languages mainly depend on design (professional) experiences. So they believe their own architectural language are linked not only to themes, areas and circumstances, but also to design procedures. On the other hand, the few architects practicing types of design procedures, believe that every type of design procedure is so general that it allows the use of different architectural languages. *Although* the notion of ‘type of design procedure’ implies that of ‘architectural language’ at various levels, in this case the tendency is that of postulating a (relative) autonomy of the ones from the others.² Both these attitudes are not completely right, and then not convenient even if the aim was that of carrying on projects able to reach convincing results.

As one may imagine, at the base of both these attitudes there are misunderstandings which concern the notion of ‘architectural language’ and that of ‘type of design procedure’. The problem common to both these attitudes has been overcome since the ’90 of last century with the diffusion of digital architecture. With the ‘Post-Vitruvian’ architecture (Forster, 2004) it has begun an era which beyond the primacy of technology conceals the progressive dependence of projects on software. Now this condition far from making off side the problem of design procedures, requests a special engagement at various levels for opposing it.

One of the aims of the paper is just that of pointing out the connections and the influences between design procedures and architectural languages. The space available for the paper compels to take for granted the above mentioned connections. So the paper will deal with the influences, by hoping to offer an occasion for meditating about the different ways for producing architecture.

As schematic as they are, the previous argumentations do not offer many possibilities for the organization of the paper. The one chosen foresees that it is

¹The British magazine *Architectural Review* recently has published on this subject a series of stimulating essays by Peter Buchanan – for the first one, see Buchanan, P. (2012). ‘The big Rethink: Towards a complete Architecture’. *Architectural Review*. March, 1381.

²It is useful to specify that the notion of ‘design procedure’ recalls the sequence of acts currently requested by the development of the designs theme, at the given operating conditions. So it is linked to various factors – operating level, method, professional organization.

organized in three sections (a part from the introduction). The first one regards some basic aspects of architectural languages. The second one draws up a list of characters proper of 'scientific types of design procedures'. The third section finally deals with the requisites of architectural languages in the case of scientific types of design procedures.

About Architectural Languages

Here it is necessary to shortly remind the basic features of architectural languages², by using a semiotic terminology.

Preliminarily it is useful to consider every building as a 'text'. The analogy between 'building' and 'text'¹ produces some important consequences.

Every architectural language is constituted by components belonging to two orders: the 'linguistic' one and the 'discursive' one. The linguistic order includes the sequence of components from the elementary ones (brick, iron rod...) to the 'space's unit' (cell unit). The discursive order includes the complementary sequence of components – from the 'combinations of two 'space's units' to the 'building unit'. So components of the linguistic order *strictu sensu* are the matter of architectural language, while the ones of the discursive order are the matter of the textual formulation. The patrimony of contributions by architects on the subject of the relationships among languages and architecture is so rich and qualified² that the trials done for diffusing the thematic of textual state of architecture meet prejudicial oppositions.

Both these two orders may be put into practice according to two different determinations: the 'tectonic' one and the 'archi-tectonic' one. The first determination represents the 'im-mediate' solutions of the problems put by the program. The notion of building as a mere 'construction' quite well expresses this condition. Attributing implicitly a negative valence to tectonic determinations only because they in general are modest buildings, it prevents from doing correct analyses of building production.³

The second determination represents the solutions derived from an elaboration of aims, means and references. They are solutions which above all feed themselves with a 'surplus' due to nature and qualities of the rules and the components in question. As people know, the fact that this kind of 'surplus' is currently inexpressible, prevents from examining it case by case. So it fosters the persistence of opinions on architecture at the same time subjective and superficial.

²Among the themes not even touched on in the paper, there is the one concerning the same possibility of speaking of 'language' in the case of architecture.

¹This analogy has been made possible thanks to the studies in the field of Semiotics of texts.

²Among the few exceptions, Peter Eisenman has originally focused the relationships between language and text in the case of architecture.

³The recent, renewed interest for Tectonics could help to finally diffuse a different approach to architecture.

Some more, the nature of architecture needs a further specification. Every building is a 'text' whose components reflect the choices done by architect in relation to the 'dimensions' proper of architecture. Up-to-dating the Vitruvian triad –'firmitas, utilitas, venustas' -, the dimensions are: the ideological one, the land one, the structural one, the functional one, the technological one, the morphological one.⁴ Every building – *independently* on the fact that it has a tectonic or archi-tectonic determination -, represents the system of relationships among the tectonic dimensions which reflect the design's aims.

But architecture – drawn or realized as it is – *is not reducible* to its linguistic components, as already said. If considered as a 'text', architecture results from the interactions between two ensembles of structures: the 'semio-narrative' ones and the 'discursive' ones.⁵ Semio-narrative structures involve the formalization on the plane of content (program...lay-out). They essentially are notional nuclei arranged by architect as attempts for answering to the program on the base of his culture. As far as some provisory answers could be 'translated' in the conventional space of drawings under the form of diagrams and the like, they belong to the plane of content. Discursive structures involve the formalization on the plane of expression (volume...configuration). These other textual structures though 'generated' by the semio-narrative structures, as coordinated combinations of textual units physically defined on the paper, enjoy a variable degree of freedom. A 'same' semio-narrative structure in fact may generate *different* discursive structures according to the factors brought into play by architect.

The ways according to define discursive structures *starting from* semio-narrative structures are closely connected with the architect's capability of elaborating the chosen architectural language. Textual components cannot prescind from the characteristics of the given architectural language. So the architect's capability is in this connection really crucial, and often decisive.

Current elevated approximation in defining (and speaking of) architecture makes necessary the introduction of the notion of 'levels of textual organization'.¹ It regards the nature of the relationships among the signs and the register of meanings. So it contemplates three levels of textual organization: the 'linguistic' one, the 'stylistic' one and the 'rethorical' one.

Projects (architectures) characterized by a 'linguistic' level of textual organization are the ones in which signs are *independent* on the registers of meanings. By this way here one could for instance think of experimental (research) architecture. Projects (architectures) characterized by a 'stylistic' level of textual organization are then the ones in which signs *depend only on one* register of meanings. One could remember for instance Neo-classical architecture. Finally, projects (architectures) characterized by a 'rethorical'

⁴Far from being a 'defensive' act intended to resist to the diffusion of 'Post-Vitruvian' architecture, it responds to the need of assuring the survival to the disciplinary patrimony by adopting the necessary changes.

⁵The locutions are in the acception by Algirdas J. Greimas (1979).

¹This notion has been elaborated in the field of the Semiotics of texts – Lotman (1980).

level are the ones in which signs *depend on different* registers of meanings. By this way one could for instance remember the architecture of Eclecticism.

About the Scientific Types of Design Procedures

If the notion of ‘design procedure’ here considered has a sufficient reasonableness – see the footnote 1, page 2 -, the perspective of a typological classification of design procedures appears in all its importance. Based on the recurrent characters as well as of the recurrent operations recorded in the existing ‘form’ of design procedure, it could be useful not only for architects and critics, but also for politicians and administrators.

All types of design procedures may be divided in two classes according to their basic relationships with the nature of rules and components: the ‘ideological’ one and the ‘scientific’ one.² They respond differently to an anthropological mix of needs and desires dating since almost the beginning of human adventure. ‘Ideological’ types of design procedures feel the impulse to the newness which induces to research always different solutions on the plane of content and above all on the plane of expression. So they aim at producing ‘experimental’ architectures. On the other hand ‘scientific’ types of design procedures feel the instance of ‘well-known’ ideas and things, which induces to concentrate the efforts on the elaboration of variations of the existing solutions on both the planes. So these other are dedicated to the production of ‘consolidated’ architectures.

The terms of the oppositive couple ‘ideological, scientific’ represent the statutory character of the two classes of types of design procedures. The paper, as already said, will deal with *only* ‘scientific’ types of design procedures.

The engagement to produce consolidated architectures implies that architects work on ‘well-known’ organizing rules and ‘already available’ building materials.¹ Contrary to the opinion diffused among the architects practicing ‘ideological’ types of design procedures, this task *does not limit* imagination, but rather orient it by preliminarily restricting the range of solutions. If working on consolidated solutions means pursuing ‘effectual’² architectures, the architect’s imagination may be usefully practiced in finding solutions able to make architectures as answers fitted *not only* for geographical situations, *but also* for historical conditions.

As statutory character, the term ‘scientific’ constitutes with its complementary term ‘ideological’ the oppositive couple which comes before the others necessary for classifying the types of design procedures.³ More

²Both the terms are in the epistemological acception (Althusser via Bachelard).

¹In this connection Beaux-Arts (academic) projects and architectures were (are) only examples of limit-solutions.

²Here the term is in the historicistic acception.

³See P. Lovero, *The critical design. A type of design procedure*, Venezia: Libreria Editrice Cafoscarina, 2008 (In Italian).

precisely, the other oppositive couples may be considered as splittings of the couple 'ideological, scientific'.

The first splitting of scientific types of design procedures is related to the production and the product. In fact they may be 'object-like' or 'process-like'. 'Object-like' types of design procedures imply that architects conceive architecture as an object *autonomous* (from any sort of external factors) and often *separated* (from its context). 'Process-like' types of design procedures imply on the contrary that architects conceive architecture as result of process involving external events as well as other professional actors.

If put in relation with architectural languages, the opposite options have very important consequences. The types of design procedures with the 'object-like' character tend not only to privilege architectural languages, but also to practice them as 'closed' systems. Clear examples in this connection are the projects of '60 of last century by Robert Venturi, characterized by a 'linguistic' level of textual organization, and the ones by Carlo Scarpa, characterized by a 'rethorical' level of textual organization. The types of design procedures with the 'process-like' character, on the contrary, aim at subordinating architectural languages to processes. It implies that these are considered as 'open' systems. The architectures by Giuseppe Samonà as well as the ones by Giancarlo De Carlo may be quoted here as pertinent examples, even if the level of textual organization is respectively 'rethorical' and 'linguistic'.

The second splitting of 'scientific' types of design procedures is related to the nature of principal operations and their mutual relationships. In fact, they may be 'analytic' or 'synthetic'. These options too have a direct verification on architectural languages. History of Architecture is by this way quite instructive. Scientific types of design procedures privileging the 'analytic' character, offer linguistic solutions at the same time *rigorous and unbalanced*. In this connection clear examples may be considered the projects of '70 of last century by Aldo Rossi – characterized by a 'stylistic' level of textual organization -, as well as the architectures by Michael Greaves - in their turn characterized by a 'rethorical' level of textual organization. Scientific types of design procedures privileging the 'synthetic' character, on the other hand, offer linguistic solutions aimed at assuring a composition of the involved elements. Examples of this character may be the architectures by Heinrik P. Berlage – characterized by a 'linguistic' level of textual organization - and the ones by Guido Canella – characterized by a 'rethorical' level of textual organization.

The third splitting of the scientific types of design procedures is involved by the coming into the play of the couple 'differential, repetitive'. This splitting has crucial consequences on the plane of architectural language. The scientific types of design procedures with the 'differential' character induce architects to conceive their projects as ensembles of *singular* solutions.¹ Useful examples by this way are the architectures by Otto Wagner – characterized by a 'rethorical' level of textual organization - as well as the ones of the '60 of last century by

¹Architects know that it *is not possible* to conceive a project constituted only by differences (only by repetitions).

Carlo Aymonino – characterized by a ‘linguistic’ level of textual organization. The scientific types of design procedures with the ‘repetitive’ character induce architects to base their projects on repetitions of rules and/or textual components. Convincing examples came from the architectures by Kay Fysker, almost always with a ‘stylistic’ level of textual organization; and the ones of ’80 of last century by Hans Kollhoff, with a ‘linguistic’ level of textual organization.

The fourth splitting of the scientific types of design procedures is involved by the coming into play of the couple ‘derived, integrated’. This splitting is decisive for the *constitution* of the project, since it concerns the origin of the textual components. The scientific types of design procedures with the ‘derived’ character are those which contemplate the definition of several components based on other parts of the given project, or on other projects (architectures). So they lead to solutions at the same time *internal* and *incomplete*. The architectures of Charles Moore - with a ‘rethorical’ level of textual organization -, and the ones by Richard Rogers – with a ‘linguistic’ level of textual organization - may be quoted as examples in this connection. The scientific types of design procedures with the ‘integrated’ character, on the other hand, aim at producing texts at the same time *whole and achieved*. So they may only lead to solutions obtained by means of the combinations of various elements on the instance of completeness. The examples to quote here are the architectures of the ’10 of last century by Frank L. Wright – characterized by a ‘linguistic’ level of textual organization - and the ones by Alvaro Siza, with a ‘stylistic’ level of textual organization.

Requisites of Architectural Languages in the Case of Scientific Types of Design Procedures

The identification of the requisites of architectural languages in the case of scientific types of design procedures needs to underline the general vocation of these.

As already said – section 2 –, scientific types of design procedures aim at pursuing ‘already known’ solutions on the plane of content as well as on the plane of expression. By means of such a choice they engage themselves in achieving a variable arrangement of already known solutions in order to allow to obtain ‘effectual’ architectures.

Now the crucial question concerns the ways according to the just defined task may be accomplished through the use of architectural languages. Since architectural languages invest both the plane of content and that of expression, also the identification of their requisites in the case of scientific types of design procedures will request two complementary series.

What to understand with the locution ‘already known’ solutions on the plane of content? That architect has to consider the units of form of content offered by the disciplinary patrimony or by professional experience, which are as much as possible similar to those contemplated by the theme of the project.

If the theme is an one-family house, architect has to select units of form of content derived from the canonical versions of the 'idea of dwelling'.

The effects of this selection invest in an *indirect* way architectural languages, since they induce architect to reduce the range of possible solutions of the discursive order. The consequences of this reduction reveal themselves at the level of distribution and volume. In fact the combination of different space's units *is not* a neutral operation; the articulation of the volume *is not* a mere geometrical development. The projects of one-family houses by Mario Botta are different from the ones by Richard Meyer since it is different the same organization of the units of form of content.

What to understand with the locution 'already known' solutions on the plane of expression? That architect selects already tested organizing rules as well as already proved building materials. If the aim is that of finding an 'effectual' architecture, architect has to engage himself in searching different declensions of consolidates rules as well as different uses of existing building materials. This time the effects of the selection done by architect invest in a *direct* way architectural languages. Each organizing rule as (differently) each textual component, as known as they are, compel architect to elaborate solutions fit for an 'effectual' text.

So for components of the linguistic order, the requisites are:

- already available building materials;
- already tested combinations of textual units;
- micro-figural motifs, able to contribute to the definition of the identity of the given text.

The fact of using already tested combinations of textual units and already available building materials *does not mean* that architect has to renounce to his own design imagination.¹

But, as architects know, the ways for satisfying such requisites are not the 'same' for architectural languages. They vary first of all according to the distinctive features of the expressive codes; and then with the personal capability of architect.

There is no doubt that languages linked to the 'Neo-rationalist' code are particularly helped in satisfying the character concerning building materials. Differently from the languages linked to the 'Rationalist' code, they mainly concern syntactic aspects, since they don't use new building materials. Languages linked to the 'Neo-classical' code are inclined to satisfy the requisite relative to the combinations of textual units. By confirming the historical tendency, they show their specific vocation in allowing to elaborate variations to the canonical combinations of textual units. More clearly, languages linked to 'Post-modernist' codes are fit for satisfying the requisite relative to micro-figural motifs. The success had by them particularly in the '80

¹This misunderstanding is responsible of a sterile controversy carried on by architects practicing 'ideological' types of design procedures against the colleagues practicing 'scientific' types of design procedures.

of last century was due above all to the tendency to 'trans-figuration' starting from inherited figures.

In considering components of the discursive order, the requisites are:

- already tested combinations of textual units (from the ones of two 'space's units' to the 'building unit')
- volumetric articulations able to represent the gap between canonical solutions and specific solutions;
- macro-figural motifs able to realize an 'effectual' architecture by enhancing the text as a whole.

By this way too it is necessary to involve expressive codes in order to distinguish the ways architectural languages have for satisfying the respective requisites. So for languages linked to 'Neo-organic' code is easy (natural) to satisfy the requisite concerning the volumetric articulation. As people know, their tendency to copy from Nature reveals itself through the inclination of refusing blocked volumes to advantage of articulated volumes. Differently, languages linked to the 'Neo-eclectic' code are fit for satisfying the requisite relative to macro-figural motifs. As answer to historical conditions, they appear particularly able to allow treatments of textual units suggested by the remembrance of inherited motifs.

The activation of the discursive order requests – as already said – an use of architectural languages aimed at defining units and motifs able to express (suggest) 'senses', to say 'meanings' and 'values'.¹ If the domain of meanings (functions) is mainly governed by norms and rules, the one of values is not only open but also conditioned by subjective instances. It involves that architect has a different possibility of formalisation according to the nature of these domains. Above all in the case of 'archi-tectonic' determinations, the text's identity depends on the architect's capability in elaborating the chosen architectural language. In fact the textual formulation implies an use of *second degree* for most part of linguistic components. When the elaboration succeeds in pursuing the prefixed design aims, often some linguistic components of textual units may be asked to play a different role. Some time they risk to even suffer from a sort of 'change of state': it is just what reveals, for instance, the difficulty of defining the 'urban' valences of architecture². So most part of linguistic components has to satisfy a *supplementary* instance: that of contributing to the definition of textual structures.

¹The main difficulty in expressing senses through architectural language depends on the fact that senses are combinations of 'meanings' and 'values'.

²These valences ratify the *insertion* of the given architectural text in the 'urban text' of belonging.

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