

**BEYOND VISUALIZATION: AN INTERPRETIVE FRAMEWORK ON THE  
CHANGING ROLE OF ARCHITECTURAL REPRESENTATION IN DESIGN  
EDUCATION**

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## **Abstract**

*From conceptualization to production, design studies are manifested through the images produced by the architectural students. As a result of this incessant condition, what has been framed through those images is a crucial task both for the young architect to reveal his intentions and to professionals and scholars who will judge and evaluate these products. Representational drawings, in general, are taken for granted as intermediary states of architectural production which are in need of gradual unfolding of design procedure both theoretically and technically throughout the process. They are transitional zones between the ideation of the design student and the materialization of the product. As a consequence of this intermediacy, throughout architectural history, architects developed various techniques and methods to succeed that insurmountable gap. Drawings, sketches, perspectives, models, 3d renderings, animations are some modes of the architect's repertoire to transcribe his very intended objective.*

*Although, from this wide range of catalogue, projection drawings, i.e. sections, plans, elevations and perspectives have a significant importance for the architect because of their proportional accuracy and abstractness; the changing stipulation in architectural production with the advent in computational technologies now calls for the design student to propose new methods to reveal his ideas and for scholars to develop further criteria for functional, structural and material assessment and aesthetic evaluation.*

*Now, it is, with the very intrusion of computer aided design and manufacturing technologies that the traditional methods of production, the vital role of architectural representation, and the accepted norms of evaluation have blurred or at least changed state. Therefore, to consider the shifting role of the architect and the changing principles of evaluation have a critical value for to offer further methods and strategies due to the fact that now it became harder for one to judge whether the design work represents considerable effort and wisdom or it is the result of a happy accident. This current situation seems to be an unavoidable consequence of the visualization possibilities of CAAD technologies which highly exceeds the imagination of design students. Although, it is too early to state a finalized shift or to demonstrate a complete replacement since the studies are too premature to illuminate the future position; concerning that these are testing times in many of architectural schools, this study aims at a critical reconsideration of the changing status of architectural production and representation in digital environment with a special focus on how to evaluate the product and the process that a design student encounter while learning by doing.*

**Keywords:** architectural representation, digital design technologies, projective drawings, changing role of the architect, design education.

## **BEYOND VISUALIZATION: AN INTERPRETIVE FRAMEWORK ON THE CHANGING ROLE OF ARCHITECTURAL REPRESENTATION IN DESIGN EDUCATION**

Architectural images conveyer of both the idea of the architect and the data for constructability is part of a back to fore process. Unlike from the images produced by other visual fields, in architecture, the relation that the image constructs between its content and its object is not a function of correspondence as when the images are produced they don't have any object to correspond yet. And, this is what makes architectural representations unique for to understand the process of design and the creative act of architect.

An architectural image is quite different than a picture in the sense that it is not a representation, imitation or an abstraction of an external object. Therefore highly departing either from the platonic view that sees visual reality as a function of ideal essences or from its Cartesian counter in which an image is assumed to be an internal mental construct of an external reality, architectural images offer a distinctive approach, which denies the presence of the external object yet to construct it further. In that respect, the authority of this construction is a matter of apprehending a reference system between what is internal to the frame and what is external to it. In architectural representations this relation between yet to be unrealized physical reality and what is involved in the image is provided by the technique and method of parallel and perspective projection.

Architectural drawings which are mostly defined as projections that consist of imaginary straight lines either vanishing in one point or going parallel to each other, in order to match the corresponding parts of the drawing and the thing drawn, are seen to be the conveyer of both the idea of the architect and construction data of the product (Evans, 1989). This considerable communicatory role of these flat surfaces not only determines their particular significance through out architectural history but also define the status of the architect since their initial invention by the Renaissance architect. Yet, they enable the architect to give his ideas a definition prior to construction, and the possibility of exchange between different agents of the design process; it elevates the knowledge of designing on the skill or craft of building. This assigned superiority of the theoretical ground of the profession over practical realm is claimed to be a result of the investments in architectural representation techniques, therefore the first part of the study will focus on the antecedent perspectives that prepare the way for the divorce of theory and practice in design education, and the subsequent biases that these dissolution bring forth. On the other hand the second part will direct on the changing role of the architect with regard to the investments in newly introduced digital technologies. The aim of the study is not to make an anachronistic reading of the two quite distinct periods, but to reveal the two paradigmatic shifts both in formation of the profession and in conception of the status and role of the architect in those formations. Because it is through the changes in cultural, social, technical or technologic formations that the curricula of architectural schools are re-adapted to the new systems of thought in order to provide the young architects catch hold of the time dependent requirements of the profession itself, it seems necessary to unveil the prospective change that the newly emerging technologies bring forth.

The material and the conceptual realm of what is represented has always been the center of focus for the historians and the critics of both artistic and architectural field. Although the conceptual field were seen to have a superiority on the material part of the profession, increasing affiliation with the fabrication or production phase of architectural process calls an

urgent attention on the needs and developments in practical field. Therefore the method of abstraction and the technique of presenting it became the main focus of representation beyond its liability of revealing the intention of the architect.

Disregarding the role that the technique has played on the creative aspect of the work of art, technical instruments are mostly seen as prosthesis and almost as superfluous factors which often impede the realization of the most daring artistic conceptions. In contrast to the general assumption made by critics, Focillon states that under the influence of the outworn forms of idealism “the idea of form itself tended to become too exclusively intellectual and dematerialized.” For him this dematerialization is a consequence of the achieved sterility of the idealist aesthetic which totally ignorant of the material or the technical aspect of the genesis of art conceives a direct link between ingenuity of the architect and the originality of the product. As a result Focillon offers to ‘make a decisive break with the outworn forms of idealism, that is, with the idea of the solidity of matter as opposed to the subtle essence and the creative gift of the spirit.’ Taking into account what Focillon offers in relation with the technical aspects of the creative act, the first part of the study will elaborate on the emerging conditions of architectural drawings in Renaissance (Bony, 1963).

Unlike from their contemporary usage, these drawings had an additional importance for the inventors of the projective techniques –that of being the reflection of the ideality of the idea. Since, the understanding of the era, as it is also noted by Martin Jay (1994), directed mostly by the scopic regimes of the emerging techniques and technologies –that of perspective and optics, the focus is mainly on vision and its power of capturing the reality. The conception of reality did not have a temporal state, but an ideal one above time. As a consequence, the subject matter of the architectural production and its representation was to mirror the “essence” and the “ideality” of the world order in its depicted visuality. In belief of a mathematical order inherent in the order of the universe the task and the aim of the young artist or the architect were to follow this ideal order and reveal it in his own studies. It is known by the followers of Alberti that to follow the predecessors so closely is a big fault as to work out independently without any proper model to follow. Under the influence of the general conjuncture of the era Alberti directs his attention on the intrinsic structure of the physical reality as appeared to the eye of the observer. This inner structure to which the external appearances are all depend has to be an order of mathematical kind, for Alberti who believes in the utmost character of geometrical universe. Consequentially, as stated by Vasari, Alberti, deemed to treat nature as a whole, that is as figures and objects in their mutual relation on the basis of a mathematical science (Brown, 1960). And it is not something other than the geometry which holds everything under the unification of one system. Taking the aspect of visibility as the common ground for coalescence, this new method of representation provides the architects the universal language. Vasari further adds that it is a consequence of the developments in representation methods that the modern figure of the artists or the architect who, as scholar and gentleman, holds a place apart from and above the artisan (Brown, 1960).

Besides the increasing awareness on the study of the geometric or proportional relations of the antic ruins, Alberti’s stance being a proto-positivistic attitude seems to be a great departing attempt when compared with the general stand. Grounding all his theory of “good architecture” on the observation of the natural order, Alberti founded the initial attempts to externalize the theory of architecture from the practical concerns. This unconditioned trust on the significance of observational knowledge, made him to focus on to develop an objective,

universal technique both for to reveal his investments on visual, physical order and to share them.

Being more than the most accurate technical instrument for exact transcription of the architect's ideas, the changes in the drawing techniques since Renaissance mostly associated with the transformation of the cultural and social organization of the architectural practice. As it is observed by Edward Robbins that the shifts in the use of drawing techniques from ancients through the Middle Ages presaged subsequent changes in the way architecture is produced. Undeniably these changes culminated in the new cultural and social status run parallel with the notion of the gentleman architect of the renaissance. Robbins further asserts that, "the last transformation of the architect from craftsman to artist was accompanied and, arguably, made possible by the new centrality and importance of drawing as a critical instrument of architectural creation and production (Robbins, 1994)."

Because architectural projections afford the architects to give form their design ideas before construction they consequently enable the designers to use drawings to direct the transformation of the social division of the labor through which architecture was produced. The transformation of the architect's role and status that we begin to witness in the late middle ages and which took its current shape early in the renaissance would be associated with the greater emphasis that the profession set on drawing. With these changes in architectural practice, drawing took hold as the superior instrument of design and the symbol of what makes the architect unique (Robbins, 1994).

Undeniably, the architectural projections have a more substantial meaning for the inventors of these methods. Architecture of the period in trial of identifying itself with the exact sciences, found its definition under the unifying, neutralizing and objectifying system of architectural projections. This provided architecture -which is in need of grounding itself on the bases of mathematical reasoning, the exact way to be accepted as one of the liberal arts.

Formed with respect to the formal resemblance to the method of seeing, architectural drawings utilize straight lines in order to connect representation and the represented object. This however, As Ervin Panofsky (1991) has pointed out, was a unification of the perceptual and the conceptual which means: "... 'aesthetic space' and 'theoretical space' recast perceptual space in the guise of one and the same sensation: in the one case that sensation is visually symbolized, in the other it appears in logical form." Their characteristic of accurately transforming the proportions on the other hand let them to be accepted as the universal and the scientific means of depiction.

What was consequential to the invention of projective methods by the renaissance architect was the appearance of the architectural treatises. Because the architectural drawings that use projective methods provide the architects to easily document canonic orders of the antique ruins and to establish them in their further designs either augmenting or diminishing in size but preserving in proportion, they formed a thorough set of normative rules which should be deployed in order to achieve a good design. Stan Allen (2000) terms the substantiation of the normative codes in written form as a shift from the "ambulant science" of the medieval builder to the regulated culture of the "royal sciences,". For him through this manifestation of architecture via inscription formed a place for abstract thought about architecture which was governed by the codes and conventions of discourse and delineated apart from the building site (Allen, 2000). Royal sciences therefore provided to the arts "constructed, regulated and thus a writable system" which they themselves lack. "The result at the end was an achieved

antagonism between the enlightened discourse of theory (scientific and generalizable) is contrasted to the mechanical techniques of practice” (Allen, 2000). All these change both in the practice and consequently in comprehension of architecture seem to be the result of images that the architect produce to close the gap between his conception and production.

Aware of the very fact that “architecture is reliant on its own images” (Blau and Kaufman, 1989) both in its materialization and in its ideation; architects in advance of the possibilities of “digital morphogenesis”<sup>1</sup> started to criticize not only the inadequacies but also the restrictions of early methodologies. Declaring that digitalization of the design procedure not only requires new methods of production but also necessitates new techniques of representation; architects of present confrontation are making trials for revealing the strategy of new conception.

Although, it is not obviously apparent what the computer might offer to architectural composition since the developments in technological inventions are continuing with great rapidity; the illustrations of experimental forms point out a shift from traditional understanding of “form making” to contemporary appreciation of “form finding” . Since very few of those experimental morphologies were realized yet in reality, what has been discussed on digital technologies incursion of architectural field, made after their representations. In other words, also the discussion of the new era became to be reliant on architecture’s own pictures.

Through the discussions, educational experimentations and in the light of few realized examples it could be derived that the newly upgrading technologies’ discourse mainly turns around architectural process and its representation not as a final product but as filmic motion that will reveal the whole procedure from its conceptualization to production. This filmic conception of architectural production which unites conceptualization, representation and production designates a new kind of seriality completely different from its prior deliberations. It differentiates from the earlier ones exactly in its two states, one of which points out the role of architect and the other one signals the changing status of architectural representation.

Yet, now the possibility of construction in other words realization of a design idea became directly related with what can be produced conceptually or better visually within CAD technologies. Computability became not only the main issue of design but also manufacture (Kolarevic, 2003). Consequence of this direct correlation between visualizable and constructible, the criteria for any kind of evaluation of architectural edifice seems to have changed state. Therefore, the most overwhelming aspect of contemporary architecture seems to be the new ability to provide construction information directly from the design information through the new processes and techniques of digital design and production.

As a result of the changes in the conception of architectural representation, the definition of the role of the architect has also altered. The architect is now not the composer of the whole process but also the editor of its sequential fragments each of these not only presents itself but virtually reflects the old and future ones. In order to be much clear, each state of production, such as, formation of the diagrams, not only expresses previous information that reflect wide variety of derivations from site, climate, culture, society etc. but also prospectively conveys

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<sup>1</sup> The term “digital morphogenesis” has a wide spread usage particularly among current “computational design” discussions. It is utilized especially for signifying the formal generative role of digital technologies. For further information see; Branko Kolarevich. *Digital morphogenesis*. London and New York: Spon Press, 2000.

indications of manufacture and fabrication. So that, each fragmentary frame of production conveying the information of the whole -with differing operators acting in differing states such as; static engineer, electrician or mechanic engineer with their own specific contribution, turns to be an “instant” in process of motion open to articulation and manipulation of architect. Sola Morales (1996) defines the changing role of architect with a focus to its historical dissimilarity as such;

Historically, architecture’s technical and material stability allowed the architect to operate as a medium, as a magician capable of formulating general hypotheses and essential formal decision with the confidence that their materialization could be undertaken without the least difficulty. The degree of integration of the various technical procedures of the building made these mere steps in an immediate relationship between the person who formulated the original idea and the final result.

To sum up, as both conceptualization and materialization phases of design process are united in the body of computer following Mitchell’s account of “architects drew what they could build, and build what they could draw,” (Mitchell, 2001) it could be stated that “architects now try to produce what they could compute, and try to compute what they could produce”. As a result of these changes in architectural production the representations of the era turned from being “made forms” of overlapped imagination to “found forms” of sequentially ordered systematization. All these changes at last, first in techniques then in technologies of architectural representation calls for a new definition of the architect and a reformation in design education to provide the necessities that this new formation require.

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