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The Legacy of Bauhaus Pedagogy in Digital Design

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ABSTRACT
The present study takes the question "What is left from the Bauhaus," as its point of departure, and examines the relevancy of the pedagogical model, by foregrounding some of the core ideas of the school, and evaluating these with respect to the set of conditions, specific to the present time, and with respect to the pedagogical problems, aims, and privileges of the contemporary design education, with an emphasis on so-called digital design.

Keywords: *Bauhaus, Digital design pedagogy, (Architectural) design pedagogy*

ÖZET
Çalışma "Bauhaus'dan ne kaldı?" sorusunu çıkış noktası olarak ele alarak, okulun temel fikirlerini günümüze özel bir seri koşul seti ile ve aynı zamanda dijital tasarım vurgusu üzerinden çağdaş tasarım eğitiminin pedagojik problemleri, amaçları ve farklılıkları çerçevesinde değerlendirerek ön plana taşır ve pedagojik modelin bu bağlamdaki geçerliliğini araştırır.

Anahtar kelimeler: *Bauhaus, Dijital tasarım pedagojisi , (Mimari) tasarım pedagojisi*

1. THE PROBLEM, OBJECTIVE, SCOPE AND METHODOLOGY

It is not long since we celebrated Bauhaus' 100th birthday. It was a short lived but influential school of design which left us a still-appealing design pedagogy. Even at the beginning of the 21st century, if we are to discuss design education, it is very hard to do so without referring to the model developed and promoted by the Bauhaus. It was surely a pedagogical paradigm shift (a la Kuhn), and a reference point (For a detailed information on the issue, see (Moholy-Nagy, 1938), (Gropius, 1938,1955,1965), (Summerson,1957), (Banham, 1960, 1989),(Pick, 1971), (Bush-Brown, 1976), (Wolfe, 1981), (Withford, 1984), (Herdeg, 1985), (Dearstyne, 1986), (Rowland, 1990), (Westphal, 1991), (Bax, 1991), (Pelle, 1998), (Fiedler & Feierabend, 2006), (Binder et al., 2009), (Barry & Meisiek, 2010), (Droste, 2010), (Ockman, 2012), (Bergdoll et al.,2017).

In its 90th birthday, the school is glorified, but it is not nostalgia: It was not a coincidence that the theme of Bauhaus Exhibition in Berlin is "Bauhaus: A Conceptual Model." It seems that the importance of Bauhaus does not lie in the historical, but precisely in its legacy: the intellectual/conceptual model it provided. For some, intellectually, Bauhaus stand for what is essential for Modernism, and for some, it still is a rigorous model for the present day. Yet from another point of view, the model is already 100 years old, and it was essentially an outcome of its own era; Bauhaus was a school developed within a set of conditions, cultural, intellectual, or otherwise, specific to its own time; and it developed a set of approaches that was specific to the very problems, aims, and privileges of that time. Now, we live in a very different World and

the set of conditions and demands as well as the aims are not the same as then, which makes the model defunct.

Digital design, one of the recent and most powerful challenges to Bauhaus pedagogy is perhaps the best illustrative case of this situation: From a certain perspective, digital design, by definition, is incompatible with the Bauhaus pedagogy. Yet from another perspective, which is shared by many, it is assumed that digital design demands (if you prefer marks) yet another paradigm shift; this time, from Bauhaus to "something else." Of course, addressing that "something else" would be a serious research theme; assuming and accepting that incompatibility and the paradigm shift, by default this is exactly what most of the recent research studies do. Such studies have their own conceptual and theoretical framework(s), and their own standards of evaluation, almost tailored to match the nature of the new model, as they were distinguished by the "traditional" ones, including the Bauhaus. By nature, such approaches imply that, "nothing is left from the Bauhaus;" of course not an objective observation, but a viewpoint dismissing the model. So, after all, one might well ask a provocative question which deserves and demands an in depth and comprehensive investigation: "What is left from the Bauhaus?" This would be a less followed, but still fruitful path, seeking to re-evaluate and re-consider the original model; the Bauhaus pedagogy with the specificities of the present day.

The present study follows the last path. It takes the question "What is left from the Bauhaus," as its point of departure, and examines the relevancy of the pedagogical model implied in the treatises of the school, for today. In search for a possibility of a certain conceptual inheritance, methodologically, the study takes and foregrounds some of the core ideas of the school, and evaluates these with respect to the set of conditions, specific to the present time, and with respect to the pedagogical problems, aims, and privileges of the contemporary design education, with an emphasis on so-called digital design.

But, before going into examining the essentials of the Bauhaus model, we must warn that actually, there existed three stages of the school under three directors. The original model was formulated under the directorship of Walter Gropius, then advanced and elaborated by Hennes Meyer, and finally transformed and reinterpreted by Mies van der Rohe, in Magdalena Droste's (2010) words, each new director following the footsteps of the initial model but also, becoming "... formidable opponents and rivals in the process of intellectually defining the Bauhaus..." while distancing themselves from the original model and "...inventing their own Bauhaus."But these stages can still be seen as logical elaborations on the initial model, and, since one can easily identify the strong conceptual inheritance between these periods, and essential structure remaining intact, one can easily be able to refer to the model as a whole.

3. BAUHAUS AND DIGITAL DESIGN

While, implications not yet known, and not yet theorized in the 1950s (Banham 1960), just about the end of the last millennium, the impact and the implications of the computers on the field of design becomes more evident and become the subject of research studies under the categories such as Computer Aided Design, Computational Design, Digital Design, each category having common but at the same time distinct characteristics.

What we refer to digital design today is a phenomena which is neither a holistic (design) model nor a pedagogy, but rather a strong influence on the conventional models of design; coming with a set of demands towards a change in the production of architecture, in the architectural design thinking, and consequently, but more important for the present case, in the education of an architect. Owing to these characteristics,

what we call digital design is distinguished from the use of computers simply as assistance to the conventional modes of (design) thinking, making and evaluation.

In the old days, we all remember our professors saying that "the computers simply have no use in the design process," of course not without evidence; once then, owing to their limitations, as a tool, they were shackling the designer. Since then, we have come a long way. The present situation that we came by at the very beginning of the 21st century is that, while, here and there, we are still discussing somehow prematurely, how we could integrate (or assimilate) digital technologies into architectural design, and question what to do with them, they have already been penetrated into the field, from many directions, imposing their own demands and conditions, dynamics, processes, and abilities, and perhaps more important, inabilities, already changing radically the way we represent, the way we design, even the way we think (or not be able to think). Being simply a pragmatic opportunity, and providing a brilliant set of potentials and possibilities, they were happily acknowledged and welcomed by the discipline. Apparently, this penetration was not innocent and not without consequences; digital technologies began to not – yet dismantle, but transform the age-old institution of the design studio and consequently so-called "conventional models" of architectural education.

New Architecture is an "...inevitable logical product of the intellectual, social and technical conditions of our age." Formulating and demanding such a change is one thing, but it cannot be achieved as a means of architectural production alone, but it requires"…training and preparing a new generation of architects in close contact with modern means of production..." These words are not from a digital design proponent, actually, they do not even belong to the century which we live in. It is Walter Gropius (1955: 6), in his *The New Architecture and the Bauhaus, tryingto theorize Bauhaus.*

Then it is not surprising that, in a recent paper, Oxman (2008) argued we are witnessing a transformation that is analogous to what we have witnessed at the beginning of 20th century, when Modernism somewhat crystallized into "...a pedagogical model...," Bauhaus, "...evolved in a period of a similar major shift in theory and design." At the "First Machine Age" a la Banham (1989), Bauhaus was a paradigm shift in the education of an architect, formulated as an answer to the changing conditions of the Modern era, now at the beginning of "the first digital age," a la Oxman (2006), we are witnessing a similar change, this time from industrial to digital, providing a new set of conditions and demanding a consequent transformation, from Bauhaus to something else. Assuming that such a transformation would be evolutionary in nature (...as opposed to revolutionary. Already constituted a substantial community, the proponents of digital design, with all their own journals, books, symposiums and congresses, began to develop their own conceptual and theoretical framework(s), their own standards of evaluation, tailored to match the specificities of digital design. This implies a radical break with the tradition of "design," with an emphasis on the revolutionary nature of the concerned change, which actually each day, isolating digital design from mainstream design research and design theory. We believe, it is an escape from a conflict and a challenge, dragging and transforming digital design theory into a closed-off entity. Notwithstanding, there is still a possibility to incorporate digital design into what already exists which would be more fruitful owing to the fact that it brings us the possibility of reinterpretation and reutilization of an age old wisdom, which puts the emphasis on the evolutionary nature of the concerned change), one must depart from the essential characteristics of the Bauhaus by challenging them with the specificities and demands of the digital design.

1. Built upon a slogan "Art and Technology – A new Unity," Bauhaus happily acknowledged the "modern" and industrial means of production and the new technology; new tools and new materials. Today, we can say the same thing for digital design as it is related with the digital revolution and the so-called information age. However, what we refer to digital design is essentially related with computers and computer software. For

example, in terms of architecture can we really mention a "digital means of production," or can we put the digital in the place of "new materials?" Therefore it is somewhat different from Bauhaus' formulation of a new unity of art and technology perhaps demanding a new type of unity.

2. Apart from its strong ties with the industrial revolution and related issues, being a part of the modernism, Bauhaus have had a very strong ideological content. Seen from a wider perspective, architectural modernism saw architecture as an "…instrument of philanthropy, liberalism, the 'greater hope' and the 'greater good'" (Rowe and Koetter 1978: 3). This was a valuable content without which architecture ceased to exist. Bauhaus was not free of this belief; (architectural) design could change the world and create a new society. So in Bauhaus, the change was not essentially about the new forms or new architecture, but at the same time through them, a better human life.

Unfortunately, digital design and its related models of design –if not incompatible with, but lack such content. One can never hear or read something about the issues stated above within a discussion addressing digital design and its products, showing that the revolutionary character of the new (digital) design essentially lies in the "formal" content, namely the form of the designed object and the very processes that leads us to that "novel" form. Despite the fact that architectural design is essentially about human life, on such discussions one can rarely find a reference to this issue. Actually, for these reasons, when we are talking about Bauhaus and its content, we are referring to architecture, while in digital design, essentially, form.

3. Bauhaus embraced a scientistic and positivistic conception of design which puts an emphasis on the absolute new created as an outcome of work on function, not from, say, some type of earlier solution. Such an approach demanded a radical break with the tradition. They put the emphasis on students' development of self-expression. Consequently, in Bauhaus, studies on precedents and past works are not permitted especially at the earlier stages of the education. In the education of an architect, the emphasis is put on the creativity of the student (it was believed that everyone is talented), which would, somehow believed to be surfaced through crafts education without reference to earlier solutions and earlier forms. One can detect an expressionism in the products designed by the students, (but unfortunately not in the Bauhaus architecture). That expressionism later turned into a constructivism (Droste 2010).

Descending from the same roots as modern architecture's functionalism, digital design also relies on a scientistic and positivistic conception of the design. However, there are differences: first, function is replaced by "data," as the determinant of form, no matter if this data comes from some rational or relevant, or from a totally arbitrary source. In digital design processes, say, wind can be of equal importance with the function. Second, the place of designer is radically shifted. In the modernist conception, it was always believed that work on function or program will "somehow," solidify into a meaningful form (Summerson 1957). Now, the designer is like a programmer which sets the processes (or codes) which in turn this processed would transform the data into a form. It is almost like a dream of a classical functionalism, filling the "hiatus" between function (or in its new conception the data) and the resultant form.

Digital design, too, claims a break with the tradition. Actually, although this argument is essentially same with the earlier version, digital design expands it by claiming to produce "non-standard architectures," departing not only from types, typologies, precedents, but also from so-called "standard architectures." Consequently, an expressionism could easily be detected in the products, actually there is a striking resemblance between the computer produced products of digital design and products of the Bauhaus' preliminary course. Different from the Bauhaus, this expressionism can also be observed in the

architectural products. When it comes to something like a digital constructivism, we are still on a common ground.

4. One of the essential aspects of Bauhaus education was its emphasis on experiential learning. One must remember the words of Gropius saying that "Paper has become too exclusive a medium of exchange. The book and the drafting board cannot give that invaluable experience gained by trial and error in the workshop and on the building site" (Gropius 1955: 46). Here emphasis is on the "learning by doing" as an integral part of the education rather than a real world experience as something added later to the "academic part of the learning." Learning by doing, a hands-on experience, a direct contact with the material and the tool was essential to the model, an indispensable element of the pedagogy. Here artist (or designer) is seen as some type of a craftsman. By experimenting with materials student is expected to acquire an understanding of "volume, space and color," a technical skill (Gropius 1955: 51). He or she is expected to develop a form language which is required for expressing ideas.

Digital design, too locates itself with reference to so-called "paper- based" design approaches (Oxman 2008) (Oxman 2006), typically on the opposite corner. However, it does not stand on the corner where Bauhaus model stands. First of all, digital design is not about crafts and not about a hands-on experience with the tectonics, the material or whatever a hands-on experience implies. Similar to the Platonic drawing board both the Bauhaus and digital design opposes, it isolates the designer from making and building.

By nature, typically, if it is taken as a deterministic model, it is also incompatible with trial-and-error learning; actually, in general, computers are about shortcutting things. This could be observed in the products of the students using computer software extensively: The computer helps the student to short circuit the architectural design process and to jump from the architectural problem to a final form, and with the shiny and attractive images produced, make her or him to believe what she or he created was a piece of architecture. Digital fabrication seems to be a feasible answer to this problem, but it puts a gap between the designer and the designed object.

5. Bauhaus encouraged "being a community" as an active part of the design education. There was an interesting network of students, young masters, masters, craftsmen and so on. Collaboration was an important part of its design pedagogy. It encouraged different crafts and disciplines to come together. Digital design on the one hand promotes individuality, on the other implies possibility of a new and different type of community, permitting unprecedented collaborative processes with the help of the Internet and information networks. With this respect it has the potential to provide an advance on Bauhaus.

6. Development of standard types was one of the targets of the school. It was a social necessity, not an invention of their era, but a new interpretation owing to the change in methods of production (Gropius 1955: 15).

This is one of the points which digital design excels. Owing to productive and reproductive potentialities of the computers and so-called rapid prototyping, digital design is an illustrative case of Bauhaus' dream on standard types.

4. CONCLUSION

Bauhaus was about change. Its founder, Gropius always rejectedit being a "style," or something solidified into a system or dogma. Then it would be totally against its grain to try to preserve Bauhaus as if it was a religious doctrine. It was formulated to be a flexible and adaptable model, an entity open to criticism and reinterpretation, of course by keeping its essence. On the other hand, so-called digital design has a great potential not to be missed, but showing great resistance to be incorporated with something else. Both

entities require a critical reconsideration, actually, Bauhaus being already reviewed in this sense (Herdeg1985) (Wolfe 1981), unfortunately digital design is still experiencing the joy of a type of "digital determinism."

Once then Bauhaus happily accepted the new technology; new tools and new materials showing its openness to such incorporations. If taken as a new tool and providing a type of digital materiality, it could easily incorporate digital design. Bauhaus basicallyrelied on workshops; it won't be farfetched to say digital design could be one of such workshops.

One must know that digital design is essentially about form, and when we refer to its processes and products we are actually not referring to architecture or something architectural, but only a formal content. There is a misunderstanding in the evaluation of so-called non-standard architectures. It wouldn't be problematic if digital architecture was to revolutionize all aspects of architecture especially its programmatic and utopian content, not only form. In its present state, it should be reformulated as "non-standard forms," or "non-standard architectural forms." This does not mean it is unacceptable. On the contrary, its emphasis on free-play of form well fits to the Bauhaus pedagogy, so does its emphasis on the revolutionary aspects of form. In turn, there is a great chance that the ideological content of Bauhaus will provide the content for digital design to be evaluated as architecture.

Reliance on the scientistic and positivistic conception of the design process, and on an epistemology and ontology that is incompatible with the nature of design is common to both Bauhaus and the digital design. Whether it was carried by computers or designers, design process is essentially a matter of trial-and–error, making and matching, or if we prefer a Popperian formulation, a matter of conjecture/analysis. However, this does not mean that it does not have, say, a computational content, or digital design has nothing to do with it. Trial-and-error as its learning model, Bauhaus could easily be reconsidered in this sense. In parallel, design always requires a body of prior knowledge, an established tradition, not only as a wisdom to start with but more important criticize and to evaluate what we have produced. This is essential to the things produced to be evaluated as a piece of architecture. What is new could only be meaningful (or could be evaluated as new) if it was embedded within an already existing cultural context.

Bauhaus' emphasis on experiential learning and crafts is still one of the basic contents of the present design pedagogy, of course with modifications. In this case there is no problem in incorporating digital design within Bauhaus: Digital design, if taken and reformulated as a digital craft, and computers as excellent tools for (fast and unprecedented) trial-and-error (learning and design) process. Of course, digital design should be incorporated with the conventional modes of making and tools. Actually, the paper-based design-Bauhaus and paper based design-digital design opposition is too weak to embrace and especially the latter formulated on an unwise assumption that conventional design operates by "sketching on paper." Design process is basicallyabout externalization of design ideas by some means to be evaluated. In this sense apart from their own potentials and limitations, means of externalization such as by sketching, computer or physical modeling essentially have no difference in this sense.

Finally, as it was already stated, digital technologies, providing unprecedented collaborative processes with the help of the Internet and information networks, and rapid prototyping is readily applicable to the original model.

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