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CONSEQUÊNCIAS NÃO-DIGITAIS DO MEIO DIGITAL PARA O ENSINO DE PROJETO

NON-DIGITAL CONSEQUENCES OF THE DIGITAL MEDIUM FOR DESIGN TEACHING

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Abstract

The present text assumes as opportune the possibility of discussing the current resistance to design studio teaching through digital media – imposed by the pandemic of COVID-19 – as a key to reveal aspects that are intrinsic to design teaching practices. Such aspects are still poorly addressed, compromising the quality of the education of architects and urbanists in Brazil. We analyze face-to-face design studio pedagogical practices in the light of authors and concepts from the research field of design methods, considering some selected examples of pedagogical experiences carried out remotely. The analysis highlights the main reasons that hinder this transition to the digital environment and discusses some possible clues to overcome them. The text also discusses the consequences of such a transition for a transformation and diversification of design studio teaching frameworks in Architecture and Urbanism.

Keywords: Architecture and urbanism, Design teaching, Remote activity, Digital medium

1 Introduction

Motivated by the current health crisis, the interruption of face-to-face classes of Architecture and Urbanism across Brazil has generated an intense discussion about the risks that Distance Learning entails to the education of future professionals of the area. Despite the efforts of many educational institutions to distinguish the remote mode that is currently practiced from traditional distance learning procedures, critical voices raised against what they saw as not only a loss of quality in the education of architects and urbanists but also a

condition with strong effects for guaranteeing the skills expected of the future professionals. These criticisms and concerns are directly related to the practical base profile of an education that covers several facets of knowledge, simultaneously associating the fields of arts, engineering, and social sciences. At the center is the teaching of design, considered an essential component of the education of architects and urbanists around the world. Design teaching is still strongly linked to the tradition of the studio, based on tacit knowledge that, by nature, resists formalization (Schön, 1987; Denès, 1999).

Instigated by these new conditions that are imposed on the teaching of Architecture and Urbanism, this paper intends to contribute to the discussion proposed by V!RUS journal about the current process of moving to the virtual world. The text thus proposes a critical reflection that has as its object the role of digital tools and, above all, the Internet in the teaching-learning of design disciplines. In this context, therefore, it is opportune to consider the current resistance to the mandatory digital practice not as an obstacle to design studio teaching, but as a key to a possible diversification of its references.

For building up this reflection, a series of authors and concepts from the research field known as 'design methods' was used. The choice of this theoretical framework is due to the relevance of such research, originated from the critique of inductionist empiricism in factual science (Popper, 1959), for the understanding of the cognitive mechanisms involved in the creative process. These studies shed light on the enduring black box of the design activity and its teaching-learning conditions[1]. More specifically, the mentioned authors represent some of the key figures that stood out in the identification of crucial aspects related to the nature of the architectural design process. They are, therefore, useful references for understanding the challenges and potentialities related to the current practice of design studio teaching in the digital environment. In addition to selected theoretical references, inputs to the discussion are brought from the direct and privileged contact with pedagogical experiences carried out in different educational institutions, both in Brazil and abroad. This contact was made through participation in design studio reviews and also through teaching experiences currently conducted in a remote way.

The phenomena highlighted in this text, therefore, do not result from a wide and exhaustive analysis of what has been happening with design studio teaching in this transition to the digital environment. They rather refer to recent experiences, which make up a much wider set, from which we can not yet distance temporally to build a more comprehensive and articulated representation of this research. Despite these limitations, the experiences gathered here offer some valuable clues for a reflection on possible developments in terms of studio teaching in architecture and urbanism. This methodological premise is based on a reference to the procedure adopted by Ignasi de Solà-Morales at the end of the last century. Also lacking a sufficient temporal distance in relation to his object of study, he resorted to an analogy with the topographic survey, assuming the identification of some points to which he had better access as a possible strategy to apprehend the contours of the vast and diverse territory of the contemporary architecture of his time (Solà-Morales, 2003).

2 An analysis of the situation

Before entering the discussion about the reflection clues extracted from observed experiences, it is worth considering some aspects of the current state of the problem addressed here. First, it is necessary to pay a little more attention to the fact that the questions about the possibility of teaching design remotely have a close relationship with how this teaching is traditionally practiced. Conceived as a typical space for every Architecture and Urbanism course, the studio represents a pedagogical device based on the interaction between students and teachers throughout the design process, by which one learns to do by doing – a teaching strategy widely known and clarified by the concept of 'reflection-in-action' coined by Donald Schön (1987). Thus, one of the main difficulties imposed by the physical distance between teachers and students, whose interaction becomes intermediated by the digital medium, is precisely the risk that it poses to the full preservation of the conversational practice considered so essential to design teaching.

The degree of difficulty associated with the current need for digital communication is directly proportional to the importance that this conversation has acquired for studio teaching. And this importance has to do with the fact that it allows to simulate, in the classroom, the complex nature of the dialogical process through which the designer interacts with the situation with which he/she must deal. In the academic environment, this situation is essentially composed by context and program, being progressively structured as a design problem thanks to the selection and evaluation of solution conjectures (Simon, 1969; Lawson, 2011). In this interactive process, the teacher, as well as the other students that make up the collective body of the studio, play a role in the situation with which he/she establishes a conversation, by reacting on the multiple effects, essentially contextual and functional, of the tested conjectures.

This ritual tends to generate a strong dependence of the design teaching on the pedagogical device of the studio. Such condition makes it tough to promote the desired student's autonomy and, thus, his/her ability to conduct the design assignment, resulting in a difficulty that often transpires in the authorial promiscuity of

many design theses. This dependence is directly related to the fact that the studio was orphaned from the approaches instigated by the 'way' (*manière*) of the master, as in its 19th century origin. The school was then formed by different ways of approaching Architecture – whose diversity led to conflicts of doctrines and styles[2] – and related to the ones the designer took part (*parti*). The different approaches, fueled by professional strategies and secrets, were adopted and practiced in studios (*ateliers*) that defined themselves as independent teaching environments. They were not even housed in the school, but used it as an arena for debate about the legitimacy of their respective references in collective moments such as student work presentations (*rendus*) and design competitions (Lassance, 2009).

Today, the professor of our universities, captured by the pretension of formalizing and universalizing the tacit knowledge proper to design education, has replaced the former studio master (Favero, 2009) and rarely incorporates, disseminates, or even wants to take an approach of his own in relation to a vast universe of possibilities. Design studio teachers prefer to take refuge in the 'unquestionable' (and unquestioned) authority of norms and standards they have learned to accept and embrace as safe enough references to teach (Denès, 1999).

The analysis proposed here should not be interpreted as something that, at first glance, may seem like a nostalgic appeal to return to the reality of the 19th century studio, where teaching operated by imitating the master. From this original device, there is one dimension that can be considered essential to the very nature of designing, which is the existence of approaches that define what is possible, or acceptable. The existence of such approaches, and even more so, the coexistence of specific approaches to each studio, makes them able to act as pertinent references in relation to which design decisions are made. Thus, students are given a certain autonomy of work and, consequently, are less dependent on conversation with their teachers during tailored supervision of their work which, in Brazil, resort to a medical analogy used to designate a common teaching practice in design studios. The presence of a certain approach allows to overcome this dependency, inasmuch as it gives a condition of existence to an environment of convictions shared by a collective body. Thanks to this environment, a certain way to cut out reality can then be established, according to the conceptual categories (vocabulary) in association with a projectual 'language', which is neither absolutely true nor universal, but which, nevertheless, can serve as a provisional or credible truth to work in that environment (Popper, 1959). It is precisely the absence of such referential spaces, which are capable of acting as sources of conjectures – the so-called 'primary generators' (Darke, 1979) – that forces the incessant and never sufficient dialogue of design work supervision, without which students become incapable of formulating their own conjectures and structuring their design problems. The current moment of physical distancing could, therefore, be used as an opportunity to develop a much-needed self-criticism about the vaunted quality that is grieved regarding design teaching. It allows to reveal a pernicious flaw in the type of training provided in undergraduate programs devoid of awareness on the role of such reference spaces.

In some institutions that have achieved a worldwide reputation, the readability of the agendas practiced in the design studio and their plurality are teaching fundamentals. A pioneer in this pluralistic education, the School of Architecture of the Architectural Association (AA) in London (https://www.aaschool.ac.uk/) is completing half a century of a teaching structure based on the ability of design studios to adopt a manifest. The plurality and explicit opposition of the different methods and objectives assumed in each of the school's studios make the AA educational system work as a kind of permanent antidote to the naturalization of absolute and definitive truths. The mastery of a technique, be it constructive or in the field of representation, thus loses its condition of necessary and universal knowledge to assume a validity that is contingent to the theoretical and technological universe of the specific agenda of a particular studio, but which will be incongruous with the discussion in the neighboring room.

In this kind of Babel in which different languages coexist, the very form of occupation and appropriation of spaces becomes a strategy of impregnation and expression of the different design identities that constitute the school (as in the example of the studio environment shown in Figure 1). Such characteristics allowed the AA studio system to be in tune with the contemporary architectural scene.

Fig. 1: Atmosphere of an Architectural Association studio, London. Source: Author, 2015.

For some critics of the system, such a tune is uncomfortable. The reason is that the autonomy conferred to the studios, which often lack the conditions required for the development of lasting and consistent research[3], tends to reproduce and foster the individualistic culture of the star system, which is compatible with a context of global economic centrality and a labor market that strongly differs from the Brazilian experience. This difference of conditions has been used as an argument to avoid any attempt of comparison and application of the AA reference to our reality. The opposition to the idea that it would be possible to build agendas or manifestos compatible with the reality of schools and the profession in Brazil stimulates the persistent defense and legitimization of technocratic training, supported by the socioeconomic need for professional insertion of our graduates. How to explore the current opportunity for critical reflection under these conditions?

In a recent text, Carlos Alberto Maciel (2018) raises two alternatives to the individual supervision regarding design disciplines, which can offer clues for the construction of these approaches or agendas: 1. the *collective supervision and review of the student's work*, which recover the notion of class, and 2. the *collaborative process between students*, which leads to the dilution of student's individual authorship, as well as the authority of the teacher with regard to evaluation (Maciel, 2018). Through these alternatives, it would be possible to envision perspectives for teaching design remotely, in the sense that they can be enhanced by the digital medium. In the first case, the practice of the collective class takes advantage of a virtual space, no longer conditioned by the physical and infrastructural restrictions of the classroom. On the contrary, characterized by an opportunity to open up to a liquid and dynamic world, it transcends the plastered and static knowledge of replication of established standards which lacks, more than ever, compasses and navigation routes. In the second case, it is about taking advantage of networking. Both possibilities were already in process, contradicting the romanticized image of the physical room, either in the constant and never met response to the demand for infrastructure (mainly the ability to connect to the Internet), or due to the growing time dedicated to the virtual world of social networks, in comparison with the world of physical interaction.

3 Consequences of and for the digital

The recovery of the notion of class raises the need to build content that is less dependent on teacher-student interaction, with an increased probability of becoming collective agendas or, even, design theory, as they are also intended to sustain a collective interaction. This shift from the individual to the collective can provide better conditions for the definition of these referential spaces that are so essential to design teaching. It is believed that this move towards a more collective and shareable approach of thinking and doing within the studio can help to arise a possibility of greater and more effective integration of digital media with the design activity. In fact, if new technologies were gradually penetrating the space of the design studio, they maintained, at least in Brazil, a role that was largely relegated to the condition of drafting and rendering tools, while being little mobilized in the design phases that conjectures are defined (Malard, 2018). Even when it happens, they end up conditioning design decisions to the replication of geometric patterns dictated by the current conventional building production, thus wasting their use as a means to explore alternative and innovative solutions.

A key moment for this discussion is the pedagogical experience of the *paperless studio*, promoted by Bernard Tschumi at Columbia University, in New York. At the time, this experience was associated with radical changes in the way of considering the architectural design process, partly supported by the philosophical and design references of Deconstructivism, which played the role of new references for thinking and designing in Architecture, defining and diversifying studio teaching approaches. Precisely because of that context, those references formed, at that moment, a universe of work capable of educating a whole generation of professionals, whose performance profile and project portfolio are very different from the current production of main North American offices (Allen 2012). These are the same offices that, since then, have served as a model for the professional practice of Architecture in Brazil (Machado, 2009) while being indirectly used as a model for design teaching.

This replication of patterns turns the design activity into something increasingly abstract, in the sense that the elements and geometries that compose it end up replacing the built reality they represent. What is designed thus becomes something completely disconnected from physical reality. In reaction to this increase in the abstraction of teaching and its apparent opposition to virtualization provided by digital tools, there is today, in some schools, a growing enthusiasm for a return to the physical world, with a greater role for materiality and construction processes. Examples of this trend are the design experiments on 1:1 scale, which are conceived as a way to retrieve the missing link between design and construction. However, this return to the physicality of the real is driven by the advances in digital manufacturing. Such tendency finds convergence with the valorization of young professional practices, stirred by the expansion of performance and production standards that arose in the field of arts (Krauss, 1979) and its effects in Architecture (Vidler 2010), finding a promising path in the so-called tactical urbanism (Lydon & Garcia, 2015). This is a worldwide trend, which consists of exploring less conventional work opportunities, located on the margins of the traditional market of architectural and urban services and, at the same time, capable of providing a possibility for greater contact between architects and urbanists and society as a whole.

Therefore, it must be recognized that the development of new digital tools for parametric design, prototyping, and digital fabrication has contributed to a growing liberation of the academy in relation to the reference of current professional practice. However, if some emerging offices have adopted such tools in their production, their work remains marginal in Brazil. They represent a rather exceptional figure in the production of the architecture that is either taught or practiced in the country, as the employment of this kind of practice implies going beyond the simple use of drafting and managerial tools. A proof is the still small number of schools that have a minimum of dedicated infrastructure (digital manufacturing workshops and even a laser cutting machine or 3D printer) when considering the total number of courses in the country (Scheeren et al., 2018). In addition, it should be noted that the presence of this infrastructure does not necessarily mean the use of such tools beyond the conventional forms of drafting and modeling, since their use hardly challenges the ability to design and manufacture manually. In fact, as already mentioned above, this new design environment is only fully justified when exploring possibilities that conventional instruments do not allow to explore. A clear evidence of this mismatch has been the use of laser cutting machines to speed up the process of making models of urban context, composed of simplified prismatic volumes, thus not bringing any type of innovation from the point of view of the capacity of conception and representation in relation to traditional modeling.

The problem of the real integration of the digital into the design process has been the subject of many pieces of research and debates in acknowledged academic forums[4]. Many efforts have been made to legitimize and even justify the requirement for its use. For example, the possibility of conceiving the architectural and urban form from standards of quality and performance or, even, from the intended types of relationship, such as in the cases of energetic, economic and building efficiency, or the application of shape grammars to the study of historical precedents. However, it is true that, despite these advances, there is still a long way to go for more effective integration.

In the Brazilian case, and unlike contexts that are more favorable to demands involving technological innovation and appreciation of less conventional forms, generated by digital architectural design (DAD), it is necessary to mention some enduring challenges. Among them are the little familiarity of teaching staff with this environment and the low degree of digital inclusion of many students – a condition of exclusion that became even more evident in the current pandemic moment. These challenges have to do with the socioeconomic reality – often presented as an argument to legitimize the resistance of the physical reference and the rejection of digital – and, indirectly, with a professional practice eminently focused on meeting the demands of a conservative clientele averse to risk taking, therefore inhibiting the possibility of experimentation in the field of Architecture.

4 Digital representation as a means to access the place

The confinement and the resulting refuge in the digital environment, caused by the current health crisis, now imply a restriction on the reach of physical reality that can no longer be experienced, or even give support for building experiments such as those just mentioned. In an urban design class held remotely[5], the absence of a field visit raised questions about the possibility of designing something somewhere without physical contact with that place.

So, would the visit to the terrain be an intrinsic factor in the design process? This attachment to physical contact with the context, as an imperative requirement for the correct development of a project, is associated with the naturalization of this empirical component as a reference of unquestionable truth – an influence exerted by the empirical model of factual science, sustained by inductionist epistemology. Despite being the object of critical review (Popper, 1959) in previous situations, this model keeps serving as a reference, hindering the necessary recognition, in this empirical reality, of those aspects that should or may compose the perceived and conceivable world by the designers of a given project. The restriction on physical contact with the context, imposed by the measures of confinement and social distancing, also reveals a certain idealization of the real that always seems to escape from us.

This inaccessibility of the real is even more evident in the field of urbanism, which deals with scales of territorial intervention that are hard to apprehend through field visits. The work with numbers and maps, which transform and deform our knowledge of physical reality, adds layers of information that give access to hidden dimensions to on-site perception. The ability to correlate data allows the generation of maps that show different aspects of the same reality. This representation that expands, displaces, or cuts out the perception and understanding that one has of the territory, thus becomes a multidimensional place to which it is possible to have access.

Therefore, the making of strategic design decisions involves a situation that, in itself, is cognitively inaccessible to the designer and only exists for him/her through multiple representations. This observation should help to de-idealize the objectivity aspect of the relationship established with physical reality, thus overcoming certain determinisms. Then, it would be possible to recognize and assume the responsibility of the designer in the definition of what is true and real, as well as the problems he/she decides to solve.

5 Confinement as a condition for experimentation

The confinement condition implied the isolation in relation to the external world, at the same time it helped raise awareness of the personal environments of work and home, from which this digital space of infinite possibilities is accessed. If, beyond the screen, a world without limits opens up, before it, the condition is, on the contrary, that of restrictions, similar to those of house arrest. However, instead of anesthetizing us, these restrictions lead to a rediscovery of the spaces in which we live. During the first remote meeting with a class in an architectural design studio at the Federal University of Rio de Janeiro, a month after the face-to-face class interruption, a student confesses: "Suddenly, I came across an unexpected estrangement from my own home and I needed to look for psychological support". Another one complains: "From where I live, I don't see the sky from my window". The digital communication medium, then, offers an unprecedented possibility for conversation, reflection, and awareness of this personal space that had become abstract, unnoticed, and, in a way, absent in our everyday experience. A design studio that moves from the *in-vitro* condition of the generic classroom at the university to the *in-situ* circumstance of our dwellings, streets, and neighborhoods. In this remote teaching mode, then suddenly arises an unexpected possibility of accessing a foundational knowledge for the learning of Architecture and Urbanism, which concerns this incredibly physical and concrete awareness of inhabiting the world.

We found an example of this kind of possibility in a design teaching experience developed in the scope of a studio hosting master degree students, at the National School of Architecture of Versailles, France (http://www.versailles.archi.fr/), with which the author has maintained a regular academic exchange. One of the works consisted in developing a catalog of huts, conceived from the mobilization and manipulation of materials available in the students' homes, and associated with architectural archetypes (examples of works are presented in Figure 2).

Fig. 2: Images extracted from the work: *Cabanes à toutes fins utiles*[6]. *Atelier* Cédric Libert & Pierre Antoine, ENSA-V. Source: Antoine Borie et Baptiste Touzé, 2020.

This design experience, which most closely resembles a child's play, allowed us to open up a discussion about the suspension of natural forces commonly considered to be necessary and deterministic constraints of the architectural form that are therefore inevitable and objective. Such constraints usually hold a good part of the design decisions, but here, issues involving the scale and comfort of the body, intimacy, and other less objective qualities were privileged. The meaning that emerges from this experience is a less naive understanding of architecture defined as 'shelter', in the sense that it allows it to be freed from the trap of its deterministic, technocratic and utilitarian explanation of submission to the laws of the physical world. On the contrary, experimentation opens up a series of possibilities for exploring other materials, rarely used in the design and construction of buildings, as they are less resistant to the action of time and weather, such as fabrics and cardboard.

In a similar sense, another work by the same studio must also be mentioned here. It consisted of observing and recording the coexistence of multiple activities that simultaneously overlap in the living spaces when they started to host both teleworking and recreational activities during a mandatory lockdown. This subversion of the functions initially predicted does not fail to refer to a pre-functionalist world, in whose spaces many functions cohabited. This condition reveals the ability to mobilize and divert domestic objects, which could lead to a kind of new 'ergonomics', no longer conceived as a deterministic relation of function over form – which defines the programmatic dimensioning of the designed spaces –, but as foundational principles for understanding architecture as a support for life (Kuma, 2008). It also indicates the possibility of redefining spaces from a post-functionalist understanding, which values other qualities, such as the levels of isolation, external connectivity, daylighting, or silence in a bathroom transformed into a study and reading room.

6 Conclusion

The analyses and discussions presented here intended to contribute to the reflection on this unprecedented moment of forced displacement to the virtual world by glimpsing some clues to face the challenges imposed on design teaching. However, and in addition to this immediate and circumstantial utility, they also point to certain pedagogical procedures and references that have been naturalized but seem to compromise the education of architects and urbanists.

Therefore, it is necessary to take advantage of this digital moment and the challenges it poses, so that we can rethink the way we teach and learn architectural and urban design. What we sought to raise as a question is that it is not just a matter of making a provisional adjustment to deal with the restrictions arising from the temporary suspension of normal conditions, but of recognizing that the current digital moment is, on the contrary, accelerating and giving greater readability to the transformations that were already underway. The analysis of these transformations allows us to conclude that, although everyday practices are already, in many aspects, digital, the teaching and learning rituals of architecture and its design remained largely unchanged and attached to certain habits that have perpetuated thanks to a certain level of inertia and resistance of the physical world to the changes that were announced. The tolerance of obsolescent, if not obsolete, space infrastructure and teaching facilities, is an indicator of this unwillingness to change. Let’s, then, wish that the current digital moment can lead to change the direction towards an attitude more consistent with the nature of social and professional responsibilities in the field of Architecture and Urbanism, helping to make it, in some way, more relevant.

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1 One of the main vehicles for the dissemination of these researches was and remains the *Design Studies* journal.

2 As in the case of the conflict that opposed the Gothic reference to the Neoclassical in the architectural education offered at the *Ecole des Beaux-Arts*, in Paris, in the 19th century (Epron, 1997).

3 In this sense, the lack of articulation between the undergraduate and graduate courses at the school itself is striking, as it was possible to observe during the author's experience at the AA as a fellow in the program *Visiting Teachers*, in 2015.

4 As examples of such forums, we can mention international congresses regularly organized by research associations in this sub-area of knowledge, such as SIGraDi (http://www.sigradi.org/), Acadia (http://acadia.org/), eCAADe (http://ecaade.org/), among others.

5 That class is an integral part of the design studio 'Atelier 1', of the Master's degree in Urbanism of the Postgraduate Program in Urbanism, Federal University of Rio de Janeiro, and took place on August 5, 2020.

6 In English: 'Cabins for all intents and purposes' (our translation).