The sketches and the design process in architecture.
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1. Introduction

This text presents some results of the research The Sketches and the Design Process in Architecture. The authors sustain that the construction of knowledge about the architectural design activity does not refer only to the way an architect designs but also to the context in which one designs and the way in which one teaches how to design. This means that architectural theory, design practice and education are inseparable. In this sense, the work of the researcher takes on the responsibility of deliberately constructing a context in which the artefact is studied in some specific sense, meaning, nexus, etc. In other words, if on the one hand the researcher creates the context considered 'ideal' in the interpretation of the artefact, on the other hand it is essential that the conditions that impact on the creation of this context be described, thus enabling the proper understanding of the contribution of that research. The focus of this paper is on the analysis of the architect's elaboration of sketches (understood here as "the artefact") as a means of revealing some aspects of the context in which this practice took place.

In this case, it is necessary to distinguish between the context in which the sketches/ artefacts are made, i.e. the architectural studios and offices that are immersed in the cultural field, and the context in which they are analyzed, i.e. that of academic research that takes place in the university. In the first, the reflection about the design activity, its procedures and goals contribute to an understanding of what is thought of as an architectural design, as defined by Martinez:

The project is the description of an object that does not exist at the beginning of the process. This description is made by successive approaches. (Martinez, 2000: 37)

We take it that the project is not a momentary act, a sudden and spontaneous creation. The activity of conception in architecture is a process which is constituted by successive

operations. These aim to better define the set of representations that may configure the more perfect model through which a building can be constructed. Nevertheless, these systematic and successive procedures are not restricted to only one way of operating because there is not only one way of applying this incremental approach. The path varies with context and its interactions with each architect's way of working, with the complexity of each work, with the available resources, deadlines, etc. Although there are various ways in which an architectural design can be elaborated, the procedures almost always start with some drawings. These can be relatively free (i.e. the preliminary sketches or studies) or more restrictive when developing towards increasingly precise drawings (i.e. the technical drawings for construction) where the representation systems and graphic signals are part of a specific language. In this sense, the reading and interpretation of sketches as the creative initial step of the design development process is a rich source of many meanings. These meanings range from the answers given by the architect to the context and the given conditions of the project (such as the site configuration and the program demands), to the peculiar creative process of each professional in the context of each architectural office or studio.

The study asked: What are the concepts and definitions used to study and interpret "the artefact", i.e. the sketch? Architectural sketches are understood as the two-dimensional graphic pieces that are characterized by their brevity and simplicity. Normally they are employed as part of a method for checking the relevance and adequacy of an idea, a desire or a possibility of a design. The research assumed that, for the architects, sketches served as means of knowing or comparing the various possibilities in one or more architectural solutions thus revealing significant aspects of the context of production, i.e. the architectural office or studio.

Despite being an imprecise representation, the sketch is by definition a recording of essential elements. This gives the architectural sketch characteristic of being the synthesis of its own graphical ontology. An interesting aspect of sketch reading is the superposition or imprecision of lines and marks which enables the observation of the many alternatives and possibilities that the architect toyed with. When reading an architect's sketch it is possible to visualize the doubts and solutions that were explored. As a consequence, the graphical elements of sketches can be very stimulating for the researcher because they synthesise and record the certainties and uncertainties that occurred in the development of the architectural design and the context in which they were elaborated.

Within this perspective, our presentation is organized in two parts: the first phase is called "Sketches and Trajectories of the Design", based fundamentally on interviews that we conducted with 80 authors/architects, each one having selected one sketch to be analyzed.

The second phase we named "Sketch Analysis". In this phase the work of six architects/ studios were selected for in depth analysis of how the production of the sketches in the design process revealed certain aspects of the context in which these artefacts were made.

2. Sketches and Trajectories of the Design (Phase 1)

The research started with the gathering, systematising and analysis of a set of 110 sketches of 80 different architects which were shown in the exhibition "The Sketches as the Conception of Architecture " which took place at the Faculty of Architecture and Urban Planning of the Presbyterian University Mackenzie, Brazil, March 10 to 17, 2004.

The whole research project lasted one year and was divided into two phases. In the first phase, 38 architects who participated in the exhibition were selected based on their availability to handle the sketches and talk about them in structured interviews. In the interviews, the following questions were posed:

In which phase of the design process was this sketch produced?

What was the communicative function of this sketch?

How was this sketch made? What was the medium and technique?

What was the significance of this sketch in the design process to which it belonged?

What types of sketches have you elaborated for this design and why did you select this one?

What is the importance of the sketch in you work?

In the first phase of this research, the architects revealed a plethora of understandings on the meaning of the sketch in the design process. This can be verified in the difficulty they found when asked to locate the stage in the creation process to which that sketch belonged. Although the architects classified their sketches as belonging to an early phase of the design process, they indicated the communicative role of the drawings in the presentation of the design ideas. This being the case, few sketches from the exhibition could be said to be of a methodological nature. A unique example from the sample of sketches comes from the architect Lucas Fehr. The sketch he presented actually belonged to the conception phase of the design activity, its role was speculative and demonstrated the exploratory process.

The analysis of the role of the sketches presented the aforementioned classificatory difficulty. When asked about the objective of producing a given sketch, the architects explained that they had been produced for themselves, for the team, for the client, for a competition. There were architects who indicated more than one purpose for the same drawing. Most of the architects described their sketches as belonging to the conception and elaboration phase of the project. There were, however those architects who presented sketches that were placed in the technical phase of the project.

In relation to the support used in the elaboration of the sketches, a predominance of graphical registers that had been elaborated on plain paper or draft paper was found. The reports indicated that draft paper is preferred because of cultural inheritances and for enabling superposition due to its transparency. The most common support for the sketches was the A4 format and its use was justified in the interviews by the way in which it afforded the organisation of the work and the control of the drawing by adequately enclosing the visual field. We also noticed that when this size changed it was generally due to the scale of the project or the density of the information.

The predominant technique was found to be freehand drawing. Some of the interviewees had already introduced hybrid drawing techniques which presented hand tracings superimposed on computer printed lines. We also observed that the type B lead pencil was the preferred drawing material because it induced an agile and faster movement. There were exceptions: one architect declared a preference for harder lead with a fine point because, according to him, it guaranteed greater precision at the moment of creation. There are architects who used felt pen to draw or even to emphasize some lines. Both felt pen and pencils were utilized in some drawings along with the application of colours, used mostly to distinguish forms, depth and some important elements of the design. Only rarely did the use of colour in the drawings indicate characteristics of materials or even the real colour of the design.

Almost all the architects that were interviewed affirmed that the sketch was a fundamental element in the development of the design. This confirmed the importance that the researchers had attributed to sketches in this work process. One of the interviewed architects affirmed that the sketch was:

Fundamental, I can not design without drawing. I think that there is no architect who can think without making drawings, every architect that I know draws compulsively

The discourse of the majority of the architects indicated that there was no preference for a specific system of representation, i.e. floor plans, perspectives, sections, etc. Sketches were produced in function of the needs that appeared in the different design phases and issues. One of the plates presented illustrates this technique of simultaneously presenting elevations, floor plans and perspectives in a single drawing. Some architects did however disclose certain preferences. One of the authors affirmed that he most frequently used conical perspectives as a sketch, in order to visualize a more definitive design space. On the other hand another architect said:

I use many axonometric and also sections. Axonometric is a very technical language that helps the idea of the sketch, and at the same time gives a good notion of real scale that the conical perspective sometimes does not have (...) and the section, for me, provides a space vision and decides the structure idea

The greater part of the architects that were studied recognized the improvement in the use of the sketch in their architectural work over the years. They claimed that the daily, professional practice allowed them to develop manual skills that resulted in a more skilled line. Most of them believed that over the years the drawings had become more mature and of a higher quality. Their sketches had become part of a process that involved discovery especially about the development of their own language and expression. Still according to the interviewees, the understanding of the possibilities of applying some types of drawing during the creation process led to a higher awareness of its communicative purpose in each stage of the project. In this way, the sketches, as embryonic drawings, allowed them to graphically develop their spatial reasoning.

Another aspect that was pointed out was that there were changes in the way the architects dealt with the paper in front of them. There was an understanding the data that was represented in a codified and abstract form was being worked as a "dialogue" with the paper. That is to say that the registered drawing came to mind, thereby processing the information and returning it to the paper. Finally, by drawing the architect at once gained more freedom and sophistication in the act of thinking.

With the evolution of the process of thinking and designing as two stages of the same action, the architects began drawing fewer pieces with higher quality and density of information. The architects described that the sketches had been executed with increasing ease and spontaneity, becoming more and more synthetic, and, according to the architects that were interviewed, with a higher level of control and security.

When asked to describe how have they learned to draw, the architects usually mentioned the early school and university years. Most of them emphasized the instinctive aspects of drawing in their childhood and their adolescence, the family influences (from father and mother, relatives, other architects, artists and intellectual family friends, etc.). Many also told of self-taught ways of learning and training, of a learning process that happened during their lifetime or even from practicing on their own. Several of them reported that

they had attended courses for artistic drawing (such as free hand, gouache, watercolour, oil, etc.) during their teens and twenties. Some architects, albeit less frequently, had received technical training (vocational course, technical college, geometric and perspective drawing, etc.). There were some who mentioned taking architectural language (LA) classes in college and university preparatory courses, as well as specialised drawing during this period. The beginning of the professional activity was an important learning experience, as many of those interviewed agreed, especially because of the contact with more experienced architects. During the learning process their pleasure in the act of drawing became evident.

The architects who influenced them were many: among the international masters cited were Le Corbusier, Frank Lloyd Wright, Alvar Aalto. Amongst influential Brazilian architects Oscar Niemeyer, Oswaldo Bratke, Vilanova Artigas and Paulo Mendes da Rocha were more commonly referred to. Artistic movements and artists were also mentioned, especially Modernism in architecture and Impressionism in art. In the second phase of the study we undertook detailed studies about the role of the sketch in the development of the project. From this previous first stage some significant questions had been identified that embodied the aims of the study.

3. Sketch Analysis (Phase 2)

The architects that were selected in the second phase were chosen according to three criteria which established that they:
employed and evaluated the elaboration of sketches in their design process;
possessed a relevant architectural production;
admittedly handled a wide range of national and international architectural references.
In this stage, six projects by different architects were analyzed from the perspective of their sketch elaboration. This paper presents three of these case studies that are the ones that most clearly illustrate the characteristics of incorporating architectonical references, the use of technological resources in the design process and the synthesis potential of the sketch in the decision-making process.

The sketch analysis in this second stage initially observed the way in which the drawing of sketches set off the design. Contact with abundant and varied graphical material pertaining to each design that was considered resulted from the critical analysis of the interviews that were conducted in the first phase of the study. The architects clearly stated that it was through the elaboration of these drawings that they had conceived their designs. An intricate web of connections was observed between the thought and the graphical record of that thought. This observation supported the claim that the architect thinks and in effect sees through the action of drawing. The process of seeing while drawing and through the drawing, however, presents some peculiarities. Most of the drawings indicated the use of a logical system based on orthogonal projections as a descriptive element of the designed architecture. The creation process of the architectural artefact followed, in every design that was analysed, a method of successive approaches.

The concept sketches disclosed a traditional practice or craft content wherein it was developed. Although the present study observed a diversity of design themes it takes a similar approach to drawing procedures. The less experienced practitioner used a surprisingly greater number of graphical records when defining the design. Even in the cases where these preparatory drawings could not be recovered, the testimonies of the architects expressed of considerable numbers. Many of these drawings present such a

provisory character that the architects eventually discarded them during the process or at the end of the work.

The predominant techniques were simple which is believed to result from the requirement for agility in the capture of images, references, possibilities, and so on. For this reason the use of lead pencil or felt pens on transparent draft paper was more frequently noticed in this stage of drawing elaboration than in the later drawings, developed in subsequent stages, that would be used in presentations, as analysed in the first phase of the research. This was a feature that distinguished the sketches of conception from drawings used for shorthand or presentation of the design. The transparent draft paper prevailed as a favourite support of representation due to its versatility and transparency that allows the overlapping and consequently the production of new drawings by tracing over the previous ones.

The so-called hybrid drawing also appeared. These are drawings that are produced in a mixed medium, part computer and part hand drawn, i.e. manual tool-aided sketches on printed bases. The first recorded case was the one that occurred during the study for the Lapa Bus Terminal, by the architect Luciano Margotto. The drawing for the OAB/CA Headquarters, of the architect José Luiz Tabith was another example. A different kind of procedure could be identified in the sketches of the architect Mario Biselli who partly drew on a digital base in order to construct his sketches (as can be in the design for FAPERGS) or partly digitalized a free-hand drawing as base for a construction drawing in the computer (as was the case with the Florianópolis International Airport).

By analysing and comparing the production of sketches from these offices it was possible to observe that architects' hands (and computers) left traces that enabled the researchers to infer some significant aspects of the context in which those artefacts were produced.

3.1.The Referential Sketch: architect Luciano Margotto

The architectural practice "Núcleo de Arquitetura" headed by architects Luciano Margotto, Marcelo Ursini and Sérgio Salles presented some outstanding features of the context in which the design process took place. Their office culture favours and values (1) constant dialogue among the members of the team, (2) emphasis on context relations, (3) the reference to various Brazilian and international architectural and cultural influences and (4) the use of the computer as a tool that provides agility and precision to the drawing development.

The Lapa Bus Terminal (2002) in São Paulo successfully illustrated these characteristics. In an interview, the architects outlined how they had outlined the first features of the design. Daily debates were held on small internal "competitions" where they could compare two or more approaches to the same problem. The set of explanatory sketches in Figure 1 shows the successive studies of the internal circulation of the bus that was elaborated during conversations between Margotto and Ursini.

The use of architectural references is easy to identify when we compare Margotto's drawings in sketches 2 and 3 (Figure 1a & 1b) with Álvaro Siza's study for the João de Deus Kindergarten. It is a sensitive homage paid to the Portuguese master which is also present in the curved brick wall that faces the square: a poetic reference to Siza's Aveiro

Library (photos in Figure 2). Many other references are found in this project, such as the Villa Mairea marquee, in the square access to the Terminal (Figure 2). Ursini and Margotto made their remarks about their intention of incorporating multiple with layers of legibility in their designs. A particular layer consisting of sophisticated play on architectural references can be noticed in their design.

During the design process, the hand-traced strokes intermix with the precisely executed computer lines. As it can be observed in sketch 4 (Figure 3a), Margotto searched for a solution for the arches that cover the platforms by drawing over a structured basis produced on the computer. Sketch 4 shows the development of this investigation and the configuration of the arches continues in sketch 5 (Figure 3b & 3c). The architectural reference here is Santa Justa Station, in Seville, a project by the Spanish architectural practice Cruz & Ortiz.

In order to understand the work of "Núcleo de Arquitetura" one must follow, through their design production, the efforts of professionals who are deeply immersed in a context of architectural culture that is committed to the idea of the architect as a social agent. The social role of the architect is visible in the deliberate decision to work as a team, emphasise the process instead of the lonely architectural gesture, value communication and the contribution from others. This is opposed to the myth of the brilliant genius who creates architecture alone with the exceptional expressive stroke. To deliberately employ a number of architectural references is an attitude that is geared towards creating – in the architects' words – complex designs that cannot be completely absorbed at first sight in that they offer multiple layers of meaning.

Finally, although there is an evident sign of the presence of the Brazilian Modern Architecture heritage, which is a strong mark in the context of the architectural production in contemporary Latin America, it happens by means of contemporary tools and procedures. The hybrid drawing is produced by hand and computer successively in an effort to significantly contribute to contemporary Brazilian architecture. This is an architecture that aims to be more aware of the problems that need to be solved and, as a consequence, to show the maturity it has conquered in decades of reflection and production.

3.2. The Complexity of the Simple Sketch: architect José Luiz Tabith

The design process that José Luiz Tabith adopted for the creation of the architectural complex containing the Brazilian Architects Order (OAB) and the Lawyers Social Security should be understood as a dynamic procedure. The design process developed in the sense of obtaining the simple as a synthesis of complex reasoning. Tabith's design process started with the conceptual unity of an arrangement in search of a composition of a variety of forms and spaces.

This analytical process occurred through a dialogue between the initial drawings that were relatively schematic shapes, and a successive dismantling and mounting process that aimed to compose and organize the fragments. The investigation was established by the reading of the sketch two moments of the design process: a set of drawings done in 1997 in the conception stage and a set of the architect's sketches aiming to explain the design during an interview in 2004.

The explanation sketch presented more synthetic and precise graphic definitions. In this sketch, the conception guidelines were identified by structural axes that investigated the

possibilities of the site context which had not been revealed in the conception sketch. The previously established solutions were exposed in a schematic way, emphasizing the structuring elements over the forms themselves (sketches 1, 2 and 3 in Figure 4).

The conception sketch had a certain non-committal quality and presented graphic superposition: fumbling lines in search of forms and organizations, program elements, distribution plans and perspectives indicating the solution verification attemps through volumetric studies. Sketch 1 (Figure 4a), belonging to the explanatory set manages to lay out the design guidelines. This is a grid that is based on a symmetrical and axial structure and is typical of academic compositions.

In sketch 2 (Figure 4b) the structure is split with the introduction of different elements aimed at upholding the diverse program components. The symmetry is also diluted by the empty intersection between these components.

In sketch 3 (Figure 4c) the unpacking of the design elements is explained as a design operation. Here the unpacking and the search for fragmentation become the main actors of the process. The design presents the conception axes side by side with plans that split the program volumes that disperse them among empty spaces and different levels.

The conception sketches were sequentially ordered in an attempt to construct a path of design decisions (sketches 4 to 9 in Figures 5 and 6). In these sketches the axial composition is not evident. The drawings set off from a circular form that intends to control the entire program. It is only from sketch 6 onwards that the axes indicated in the explanation sketches are outlined. In the subsequent drawings these axes become more and more diluted. The search for a formal definition creates the opportunity for complexity and inserts the empty spaces and the elements (such as columns, ramps, covers, walls, volumes) as protagonists of this dissolution. The parts are individualized in order to be legible as fragments.

Remains of the simplicity of the cross axes or the circular conception unit are submitted to the complexity of fragmentation. The slanted border defines the implantation of the bigger building. This invites the promenade architecturale where the pavements gain autonomous resolution.

The context of Tabith's architectural education was clearly modern, marked by his fascination for the work of Le Corbusier and Niemeyer. Nevertheless, his personal trajectory introduced the use of the empty spaces as propellers of a city and the elements of architectural investigation. The more recent of Tabith's propositions find echoes in a set of reflections classified by Montaner as a context the fragment culture, the collage, and the assemblage. (Montaner, 2002: 109-202). Pertaining to this context are James Stirling's (1926-92) works starting from the 1970's, such as the Staatsgalerie (1977-84), the Wissenschaftszentrum (1964-86), the works of Hans Hollein (1934-) and Arata Isozaki (1931-) (Figure 7). According to Montaner, all of them are based on an understanding of the building as a complex, as a sum of diverse fragments, almost always dismantling the principles of a closed and unitary form.

In Tabith's design process we find this oscillation between the simple and the complex. The simple is derived from his modern and rationalist education, indicated by the way reason subdues the explanatory drawing and verified by the formal unity expressed in his first sketches. The complexity is derived from his immersion in the contemporary culture of

his comprehension that "this complexity of life really hits us", a position that reveals a special sensitivity to the context.

3.3. The Technological Sketch: architect Mario Biselli

The architect Mario Biselli stresses that the way he thinks the design is not based on a formula or any procedure which can be repeated in different architectural works. The need to attend to the specificity of each context, formulated in each particular occasion, makes each design process unique.

For him, the central concept of the project comes from intuitions that occur during the very action of doing. 1 The interpretation of the aspects that condition the design, the gathering of knowledge from previous solutions and the cultural context in which the architect was educated and developed his practice lead to decision-making.

Biselli likes to operate both with sketches and computer aided design. His professional work includes the computer as an auxiliary instrument in the creation as well as in the development of designs:

I start drawing by hand, then I move to the computer and back and so on (…) I produce a design 'dialogue' with the machine.

This "dialogue" takes place after the first free-hand sketches. The scaled and dimensioned volumes are modelled from the first ideas that are produced manually with the assistance of computer graphic software.

The Florianópolis International Airport Competition is the 2004 award winner and was conceived in association with architect Guilherme Motta. The design for this airport took off from a careful interpretation of the competition entry regulations. Biselli produced an initial drawing where he established the guidelines of the design. He split up the sections and passed on the responsibility for detail each of them to his team, taking his sector, division and organization as the start point. In sketch 1 (Figure 8a), made using Coreldraw software, the team established the functional issues on the plan. All of the main anticipated activities of the program were included in this drawing. Nevertheless, says Biselli, the main problem at the start was to decipher certain technical terms adopted by the Brazilian air traffic authorities (Infraero).

Sketches 2, 3 and 4 (Figures 8 and 9) show architect Motta's sketches investigating the possibilities of the structure, which should allow the link between the airport departure lounge and its external bridge. The architects later abandoned this idea opting for interstices inside the roofing curve that permitted the connection with the fingers.

The key to solving the problem was in understanding a major concept relating to the levels of departures and arrivals. With this out of the way, a series of experiments took place culminating in the architectural concept, synthesized in sketch 5 (Figure 9b). Here the departure mezzanine and bridge, as well as structural definitions and roofing, are made explicit. The next step was the slanting of this sketch, which was later used as the basis for the final computer drawings.

Most of these sketches are sections of the design project. This fact suggests that the crucial point in terms of form was to define both the curve of the and the columns. At a certain point, Biselli and his team were defining the functional layout on Coreldraw while

architect Motta was undergoing a series of small sketches for the roof. In sketch 4 (Figure 9a) it is possible to observe Motta's several sketches of this large cover where the idea of the wing started to take shape.

In Biselli's practice, distinct from Margotto's, the impact of other contemporary designs is not explicit. Although he declares that no influences were taken, his design of the Florianópolis airport resembles to a great degree Piano's Kansai Airport design from 1994 (Figure 10) particularly regarding the roof. Careful observation of a section of this design (sketch 5 in Figure 9b) reveals the similarities between both works, which are reinforced when we attend to the sinuosity and curvature of the roof as well as the "V" shape of columns and the lattice girders. This can suggest that both airports present responses that are strongly tied to contemporary architectural culture that in different places find similar solutions that are being developed with, apparently, no direct contact between them.

Biselli's practice makes use of computer graphical aids for different purposes. He chooses to model on DataCad software, whereas the other members of his team use 3DStudio and AutoCad (Figure 11). This practice has a production of technical two-dimensional drawings on AutoCad, whereas DataCad and 3DStudio are usually accessed in order to trial materials and render images from a specific angle.

There are two types of digital models: volumetric models, generally created by the architect as an initial basis on which to draw, and detailed models created by the team to deepen the analysis of the project. Even though both architect Margotto and his colleague Tabith also make use of two-dimensional drawings on the computer, at Biselli's practice the digital model becomes part of the creative process, acting as a basis for the execution of three-dimensional explorations of the designed space.

4. Sketch Analysis (Phase 2)

The analysis of the selected architect's drawings for this second phase clearly shows the Modern inheritance in the conceptual guidelines that characterise the context in which these professional exercise their practice. Examples of this influence can be seen in the great variety of stages and procedures, from the solitary drawing of Tabith to "the collective" drawing of the "Núcleo de Arquitetura", passing through the artistic vein of Guilheme Motta. In these Brazilian architects from São Paulo we also observe a search for a more complex and subtle modernity that is not so rigorously geometric, functional or spectacularly photogenic. Their architecture is more bound up with architectural experience and space quality, which is more suitable to the contemporary practice. This is a modernity that demands economy towards balance and expression of its tectonic truth, where rationality and formal game are not necessarily in opposition but reinforce one another once the architect dedicates enough time and ability to it (Cox, 1998: 11). In this way, these years of work and ability, without a doubt, result from the hours dedicated to the production of handmade drawings, on the computer or even the hybrid drawing that was so often noticed in which the printed computer aided design receives interventions by hand in an iterative process.

The "reading" of these sketches leads us to suspect that the architects, once when requested to do so, easily disclose that the great masters of the Modern Movement are their main reference. Le Corbusier, Oscar Niemeyer, Frank Lloyd Wright, Vilanova Artigas, Alvar Aalto, Paulo Mendes da Rocha, Mies van der Rohe appear on the top of the list of the admitted influences. Nevertheless, it is worth observing that the analysis of the sketches reveals, specially in the cases of the Lapa Bus Terminal and the International

Florianópolis Airport, a team work context where the architect's strokes are superimposed by his partner's then digitalized by other architects on the team and then returning to the author's hands. Also the concern and admiration for some artistic movement is frequently recognised in the drawings be that in the style, in the use of colours or in other details. It was possible to observe that these characteristics somehow corresponded to the books, magazines, posters, pictures, furniture and interior design of the architecture offices/ studios we visited in order to carry out the interviews.

The closest influences that the architect experienced at the moment of designing exist in the architect's imagination. Sometimes they reveal it very directly by means of clearly displayed citations. In other instances the influences are slighter. The projects are permeated with forms and connections from contemporary sources of architectural making. The amalgam between the formation and the influences establishes the vectors of the construction of a language that is particular to each architect and that is synchronized with the social and cultural context in which the professional is immersed.

As a synthesis, we may observe that the first phase of the research permitted us to consolidate some data about the sketch elaboration process in the work of the architect. This enabled the formulation of a new set of questions that were put to the selected architects in the second phase of research. In contrast to phase one (when the process of analyzing only one sketch by the architect did not enable the precise interpretation of which phase it belonged to) the second phase was characterized by the possibility closely follow the "evolution process" of the sketch's elaboration and, as a consequence, to understand more precisely some aspects of the context of the sketch elaboration that could not be studied in depth in phase one.

It is important to recognize that the action of the "reconstitution" of the evolution process of the sketch elaboration is also a context matter. The context as an issue was deliberately devised by the researchers in order to analyse the artefact. In various instances (in the office when collecting the sketches, reorganizing them in front of the architect in order to reconstitute the design path, interviewing the architect over this re-mounted sequence, asking him to draw new sketches that explain the conception trajectory or in the action of analysing this material in the context of the research) the researcher is always going through a process of interpreting the object in an attempt to constitute a theoretical body capable of contributing to the act of teaching. In other words, the same conceptual tools that were constructed in the context of the research to analyse the object and to understand some aspects of the context in which it was produced are those that contribute to the structure of the works derived from it. These works can be conference articles, book chapters, lectures or subject modules. In this sense, our intention was to provide a contribution towards the reflection about the procedures of academic research in the field of the architectural design research.

Endnote

 1 For the authors, intuition does not exist without professional experience and knowledge.

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