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## Architectural Mind in Transition

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### Abstract

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**Background:** the research developed in the field of Architecture Education, considering the preceding texts about an Architectonic Mind. **Purpose:** to “draw” a turning point, based on the previous research, so that, through those results, we can give an answer to the new challenges. **Methodology:** based on a critical analysis, to revisit concepts, in a changing world context, towards the discovery of new methodologies, reflecting in the present and future concerns and expectations. **Results and conclusions:** the idea is to “close” a “step”, through the review and conclusion of the earlier investigations and formulate the construction of a new path, where new premises emerge, so that we can prepare the future architects, aware of the condition of the real world now, but conscious, however, of the pillars on which the today demanded transformations are based on.

**Keywords:** Architectural mind, architecture education, research and teaching.

### 1. Introduction

Over the last 6 years we have been writing about Architectural Mind: its meaning, how to create and how to develop it<sup>1</sup>. What is the role of Architecture Schools?

When we think about the responsibility of teaching in this area and its ability to develop in the students an artistic, technical, ethical, social, human and economic approach, we must reflect about how students use all the tools (that are transmitted to them), as an additional value for their training and for the development of future research and professional life. Therefore, we discussed that learning in architecture is done by doing, where draw is the starting point for increasing the conception of an idea.

This process gradually became the key to achieve an Architectural Mentality that each student developed during their academic career and should carry to the practice of the profession, in a path that is always evolving and transforming. Creating an Architectural Mind emerged as the greatest challenge and goal that a Teacher can have, as it promoted in the students a stimulus for the improvement of an individual path, into a unique approach in the Design and Project process, providing the tools that allow them to work in a holistic way, growing and evolving as students and future architects. After these years, and with the emergence of so different variables in the teaching and learning process, we must reflect how to face the new challenges, which surge more and faster.

### 2. Material and Methods

This paper aims to review the methodologies applied in the CUs of Drawing and Architectural Design, in the first two years of the first cycle of studies of the Integrated master’s degree in architecture, at ISMAT,<sup>2</sup> focused on a period of 6 years, from 2018 to 2024, allowing the establishment of final conclusions.

Considering that drawing is always present in the act of designing, Drawing and Project are two curricular units that, in the first and second years of the first cycle of studies, are and should be complementary. In fact, this should happen throughout life. However, this analysis is not about restructuring the UC, but more about ways of thinking

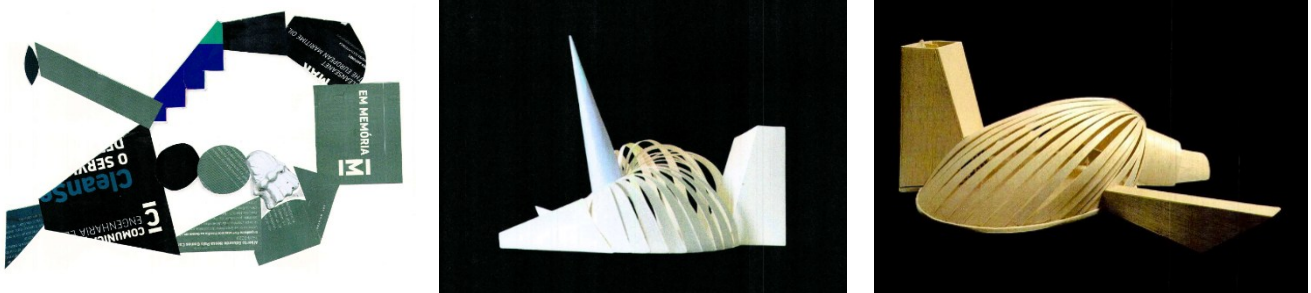
<sup>1</sup> BORDALO, Ana; RAINHA, Ana Paula (2019). The border between architectural thinking and architectural teaching. 17th International Conference Architectonics: Mind, land, Society. Universitat Politècnica de Catalunya, Barcelona. (29 a 31 de maio). p.105-111. ISBN 978-84-09-19374-5

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and acting. It was not intended to change the curriculum of the UC(s) in question, but their correct articulation and constant adaptation, to enhance the students' abilities from the beginning of their training in Architecture, and, at the same time, adapting them to the new realities that arise in an increasingly rapid way.

### 2.1. Studio

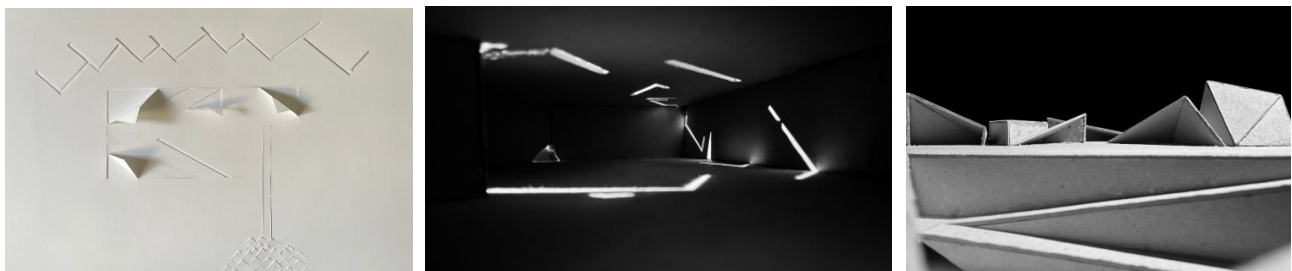
The first approaches were supported by the assumption that learning to design involves designing. The ability to develop and understand the creative process of each student, in an individual way, was explored, through the elaboration of specific exercises that aim to awaken the sense of perception and creation of a space through a concept. The purposes to be achieved were in principle, the first notions of composition, scale, space, dimension, perception, construction and balance.



**Figure 1.** Project Studio exercise: *Hand Thinking*, 2025, Liliana Quitério, ISMAT student.

Project studio developed as a process of qualifying space and environments to be lived and experienced, beyond form, understanding the general notions of architecture in its physical and immaterial aspects, and its connection with the others CU(s) in general. The notion of the different elements of architecture and their ability to change the perceptions of a space, like shadow, light, color or texture, is a fundamental task, having in mind the understanding of the functional and symbolic aspects of space.

Starting from drawing, collages, foldings, or other abstract representation techniques, students develop spatiality without function or program (figure 1 and 2).



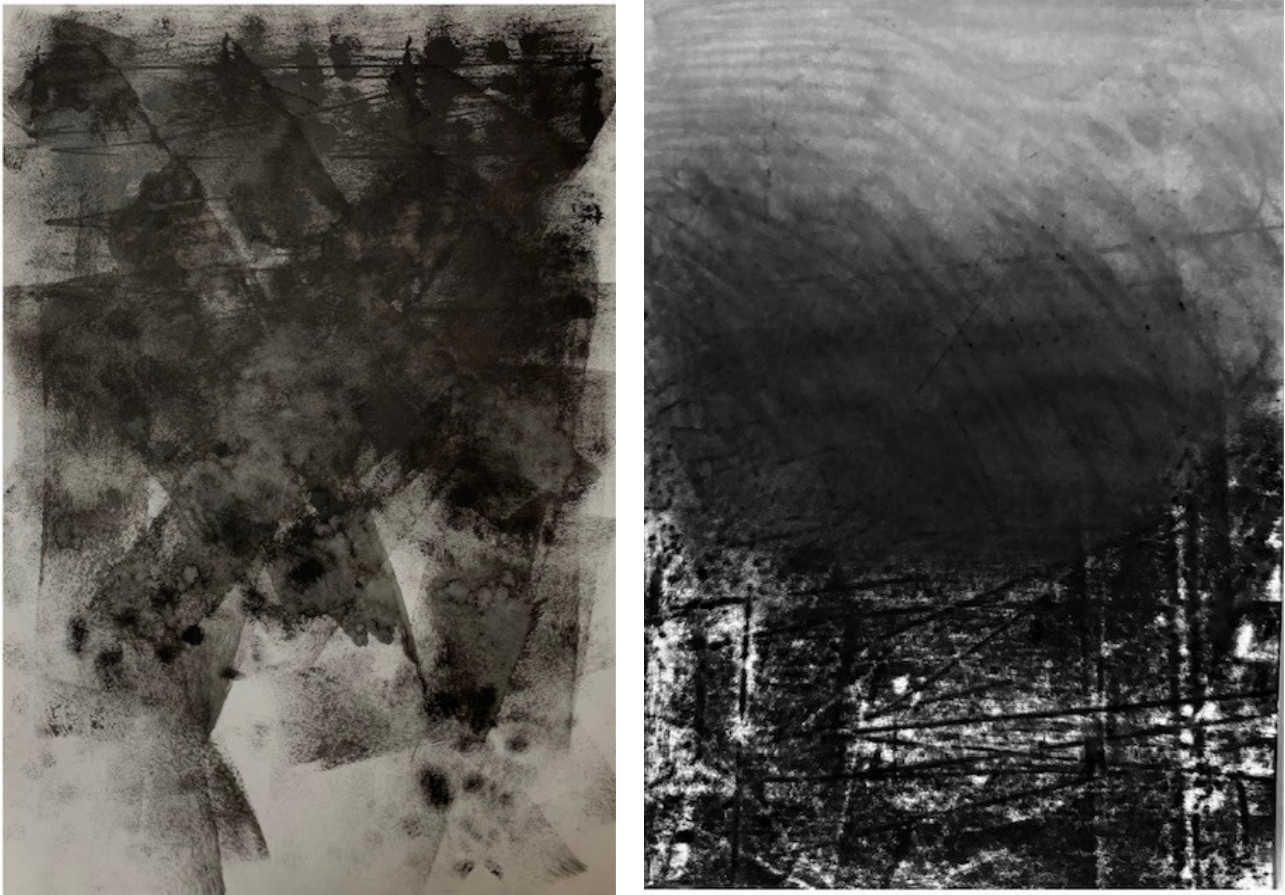
**Figure 2.** Project Studio exercise: *Hand Thinking*, 2025, Eliezer Silva, ISMAT student.

### 2.2 Drawing

The first approach of the students to the universe of different materials and techniques of representation and aims to stimulate and develop a critical observation and analysis, through a creative imagination, the exploration of the graphic and expressive potential of the different materials and specific instruments of Drawing. The understanding of the "line" as a graphic expression of the drawing and for the Drawing and the discovery through "spot" of the expressive potentialities of graphic space. Is the first exercise, where rhythm, tensions, movement and textures contribute to a critical reading of one or more objects by the identification of a mental and gestural path, and the understanding of the concept of scale and the surrounding space, with the introduction of the human figure.

Draw must consolidate the knowledge acquired by students in Studio, reinforcing the concepts of form, function, scale, structure, typology, (...) incorporating, at the same time, the notion of composition and materiality, through the resolution of specific and directed problems, aspiring to be an essential and fundamental instrument for the process of thinking and doing Architecture, and a primordial tool for the disciplines of Architectural Design.<sup>3</sup>

<sup>3</sup> RAINHA, Ana Paula; PINTO, Miguel Moreira (2024). "Space Behind Abstraction: the metamorphosis of shape".



**Figure 3.** Drawing exercise: *Space behind abstraction*, 2024, Mariana Martins and Joana Amaro, ISMAT students.

The essence of the work begins here, with the knowledge of the mark. To transform without knowledge seems to be perverse. The mark is something full of information: the dark or light points, the emptiness or the fulfill space, the vibrant tones of gray, the branches or the heavy density. Once, we begin with something interesting, the discovery of more and more information happens. The organization of the mark and the process of its transformation (metamorphosis) in space, were the principal aims of these examples.

The exercises aimed to develop observation, creativity and divergent reasoning skills. In the relationship between hand and mind, it was essential to train students with the creative capacity to idealize other worlds, where design is a fundamental tool conceive an idea.

The syllabus aimed to identify drawing techniques that need to be developed by students, since they should bring these techniques to amplify their ability to explore differentiated aesthetics, where drawing assumed itself as a way of synthesizing and transforming the existing world around us.

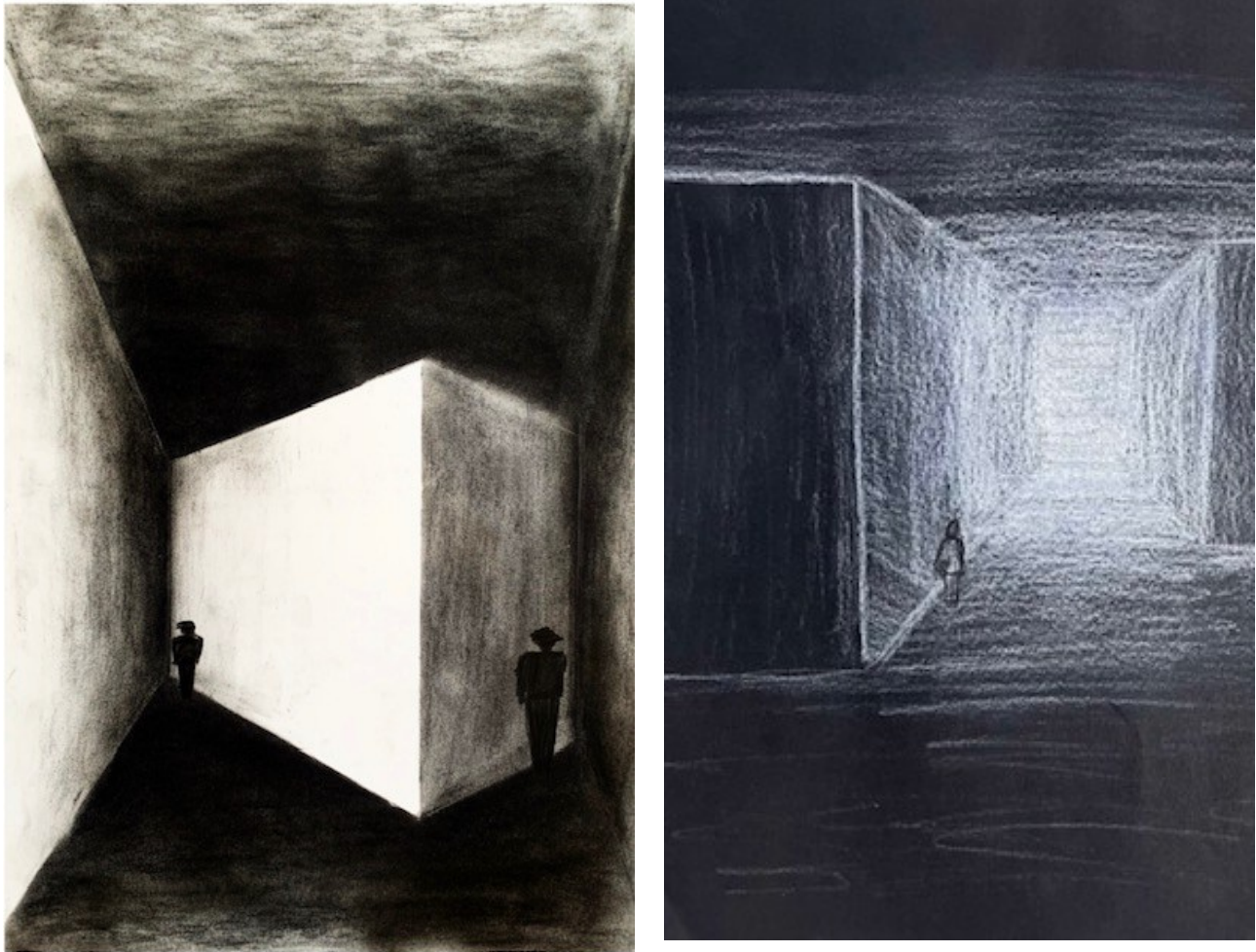
### 2.3 Methods

The adopted methodology had 6 phases:

#### *Phase 1- Research.*

It was developed in two moments which complemented each other. One corresponded to the research carried out by the researchers (teachers): how to teach, what to teach. The other was related to the research carried out by the students. The research of the teachers was based on their own experience, as former students, teachers, architects, conversations with peers, scientific meetings, conferences, and their own scientific production.

No less important were the students' works, without which the teachers' research should be incomplete: it is an intuitive search (not forgetting that they are students in the first and second year of the first cycle), naïve, without preconceptions, enthusiastic by the discovery. Guided and supported by specific bibliography, but also by works of literature that appeal to an imaginary, it is in this research that the true creative component takes place, with the guidance and monitoring of the teachers.



**Figure 4.** Drawing exercise: *Space behind abstraction*, 2024, Mariana Martins and Joana Amaro, ISMAT students.

#### *Phase 2 – Experimentation*

The classroom was the fundamental scenario and the students the main protagonists. It is with them that all creative and conceptual work will be developed, and it is with them that the journey, that was intended to be a process, was completed, without a defined beginning or end.

Experimentation was expected to create an "Architectural Mind" through the sensibility for architecture and the tools and techniques that could, from the smallest gesture to the greatest objective, promote thinking, learning and experiencing space.

#### *Phase 3 – Discussion with peers.*

Presentation of papers and participation in international scientific meetings dedicated to the subject, namely the conferences promoted by the Polytechnic University of Catalonia, Barcelona, by the Department of Architecture of University of Naples Federico II, Naples, EEEA conferences and by Alanya University, Turkiye CCAUA conferences.

#### *Phase 4 – Application | Evolution.*

The application was related to the development of practical exercises with students of the first cycle of studies in architecture (first and second year) in the classroom context, with challenges which aimed to promote their design individuality and curiosity for knowledge.

Evolution was related to the process itself, based on research as a fundamental support to achieve the objectives. We did not intend to start from absolute and rigid truths, neither from irrefutable methods, turning flexibility in a crucial factor to grow in this practice of creating an "Architectural Mind".

The receptive and critical capacity of students was also an extremely important factor for evolution. It was necessary to keep in mind that each student is different from the other, having different sensibilities to conduct the project, according to their expectations and cultural background.

#### *Phase 5 – Final conclusions.*

This phase allowed to present the compilation of the work carried out by the students, the results achieved through the adapted methodologies, together with the realization of each student, providing, in this way, the continuity of a line of action in the classroom context.

### **2.4 Analysis**

In the first year of the research (2018-2019), the monitoring of the works allowed us to establish a continuous observing of their constant evolution and, simultaneously, the beginning of the construction of an "Architectural

Mind" in each of the students. At the same time, the discussions among teachers permitted to face the students with their own hesitations, contradictions and doubts, allowing the development of a structured work, with hypothesis capable of increasing their first ideas and concepts.

The developed work and results were presented at the Polytechnic University of Catalonia - UPC, in Barcelona, in May 2019, at the 17th Conference Architectonics Mind, Land and Society.<sup>4</sup>

In the second year of the research (2019-2020), the model was replicated, in a process that aimed to captivate and empower the students, providing them with essential tools so that they acquire greater skills and start structuring their project autonomy. The results were presented at UPD, during the 18<sup>th</sup>.

International Conference Architectonics Network: Mind, Land and Society, 2020. This time, it was in an online format, due to the pandemic. It is not our intention to focus in this paper on the experience of e-learning teaching, resulting from 2020 pandemia. However, we did not fail our objectives, and despite the difficulties arising from the fact that it was the first time with an e-learning experience, we did not give up to continue to apply the methodology that we have proposed to, with satisfactory results taking into account the circumstances.

In the last years of research, it was intended to continue to apply the methodology, the presentation and discussion with peers at UPC and DiARC, now with already approved articles, and with the publication of a book, with the presentation of the work carried out with the analysis and comparison of the obtained results, as well as the final conclusions.

We can consider that at the end of these years it will be possible to establish a model that can be continued, with variations related more to the background of the students, which we have recognized that it is changing more and more every year.

### 3. Results

One of the most important messages to transmit to architecture students was the sense that learning is a continuous process, where "to do" is an essential part of it.

This approach focused on a possible way to develop an architectural mind, which means the process for its implementation and, mainly, the challenge of stimulating these feelings in students, from and in the first year of studies in architecture.

How to teach architecture, since, in fact, there is no formula for such teaching, appears as a continuous challenge. When we talk about a way/model of teaching curricular units as architectural design and drawing, we are faced with an almost absolute truth: this will depend on the teacher's personal, professional and teaching experience, and, at the same time, on the way each student absorbs and understand the process, which depends on his or her personal experience and previous training.

In this context, to promote in the students the need to develop an "Architectural Mind" emerged in this research as a working hypothesis based on the thinking of Architecture as a Discipline that also aggregates different knowledges: artistic, technical and cultural. In the first cycle of studies, students must acquire the necessary tools to develop their individual design capacity, while, in a second cycle of studies, the students must acquire the necessary tools to start a research process more directed to a hypothetical specialization. It is important to realize the process of thinking, understanding and learning, as the more important approaches focused on a construction of a way to develop an "Architectural Mind."

### 4. Discussion

The research presented some examples where the method was implemented, which must be in constant adaptation, according to the characteristics of the students and the way they react to the programmatic principles established by the Study Plan.

When we think about an "Architectural Mind" and the process for its implementation, we refer to a path that includes at least five distinct moments: (i) observation; (ii) analysis; (iii) the concept; (iv) the methodology; (v) the result (the answer).

From the first level of studies, observing and experimenting seemed to be essential to achieve motivation, to develop a "taste" for architecture, in a method that is always reinventing itself, through observation and analysis. The goal is to lead students to find /create an idea, develop it, in order to discover their own methods for creating space: architectural space, first in an abstract approach, mainly through drawing, models or graphics, and then in a more real procedure. It supposed that students acquire the awareness that architecture is a whole, to be seen and done holistically, since the site, the program, the client, to the respect for the heritage, the planet and the way of living.

We can say that an "Architectural Mind" consists mainly of an attitude towards Architecture that teachers should increase and stimulate from the beginning.

The objective is that the several approaches, abstract or not, should always be conceived as Architecture, where space is the main character.

The significant thing is the way students observe and interpret the world, and how they represent it, from the first drawings, sketches, commitments, knowing that every detail is a fundamental part of the whole, where Architecture is a process that starts in our mind, with our emotions (sensations), and goes to the end, in a constant mutation and creating a "state of mind".

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<sup>4</sup> BORDALO, Ana; RAINHA, Ana Paula (2019). The Border between architectural thinking and architectural teaching. 17th International Conference Architectonics: Mind, land, Society. Barcelona: UPC. p.105-111. ISBN 978-84-09-19374

The architect is responsible for creating places (spaces) that must promote the quality of life of the people, at different scales, from the house to the city and the territory. The great assay is always to project new futures, in a process of constant search and progressive self-criticism. As students, they must be prepared for this! As architects, they cannot forget it.

It is in the interrelationship between observation, analysis, concept, methodology and the final project, that there is an adequacy between action and a reflective practice (Schön, 1987), where the coherence to the project design process is found.

This is a process that begins in the classroom, but, when achieved, becomes a practice from training to profession life, where the design of the project, through drawing, is considered the beginning and the end. It starts from the implementation of a process that reconciles methodologies and pedagogical practices applied in the curricular units of Drawing and Architectural Project, what allows, through the development of different exercises, specific to each CU, to establish a common pathway for each student to find his own "Architectural Mind".

The symbiosis between Drawing and Project in the teaching of Architecture appears as an effective answer to the formative structure. In other words, this research, which began in the 2018-2019 academic year, demonstrated that these two curricular units are completely complementary, from the beginning, having the conception of space as the main common objective.

## 5. Conclusions

One of the most important types of knowledge to transmit to architecture students is the way they should think, act and question their learning process.

This approach focused on a possible way to develop an architectural mind, the process for its implementation and, mainly, the challenge of stimulating these feelings in the students, from and in the first year of studies.

This process was based on two factors: how to teach and how to do architecture. Everything begins with the problematic of how to teach, since there is not a specific formula for such teaching. When we talk about a way/model of teaching the curricular units of architectural design and drawing, we are always faced with an almost absolute truth: this will depend on the teacher's personal, professional and teaching experience, and, at the same time, the way each student absorbs the teachings, depending on his or her personal experiences and previous training.

According to Luiz Conceição (2018)<sup>5</sup>, training in Architecture should provide students with the necessary qualifications for the practice of the profession, as well as for their relationship with other activities that are inherent to it, such as criticism and research. In the first cycle of studies, students must acquire the necessary tools to develop their individual design capacity, while, in a second cycle of studies, they must acquire the necessary tools to start a research process more directed to a hypothetical specialization.

For a student of the first cycle of studies in Architecture, it is considered that one of the most important types of knowledge to transmit is the way in which he can (should) think, act and question his learning process and, simultaneously, his process of thinking, learning and understanding. This approach focuses on a possible way to develop an "Architectural Mind".

The research lasts with the appearance of new challenges, especially with the emergence of new tools, such as artificial intelligence. In the genesis, many of the methodological principles will be maintained. We cannot disconnect ourselves from the new conditions but be receptive to what the new technologies can offer us, as has always happened. It is in the common sense that, once again, the pathway will be established, knowing how to use with mastery, understanding and good sense what the "new" has to offer, keeping in mind the real and true condition of Architecture. It is in the balance between what we have already been taught and what we will have to learn that the premises of what we must transmit to the new students must be based. Whether we like it or not, the big question will always remain: in a world in such constant and rapid change, how shall we teach Architecture?

## Note:

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## Referencies

- Bordalo, A. (2023). Architectural space: Where do we start? – A way of thinking the first approach of an architectural design studio. In R. H. Husain & H. A. Nia (Eds.), *Beyond blueprints: Advancements in architectural education and innovations* (pp. 85–98). Cinius Yayınları. <https://doi.org/10.38027/ICCAUA2023blue01>
- Bordalo, A. (2024). Teaching architecture: New challenges. Paper presented at *ICCAUA 2024 – 7th International Conference of Contemporary Affairs in Architecture and Urbanism*, Alanya HEP University, Alanya, Türkiye, 23–24 May 2024. <https://doi.org/10.38027/iccaua2024en0089>
- Bordalo, A., & Rainha, A. P. (2019). The border between architectural thinking and architectural teaching. Paper presented at the *17th International Conference Architectonics Network: Mind, Land and Society – Freedom to Design! Architecture as a Bridge between Nature and Culture*, Polytechnic University of Catalonia (UPC), Barcelona, Spain, 29–31 May 2019.
- Bordalo, A., & Rainha, A. P. (2020). Re(h)a(l)habilitation as a way to promote an architectonic mentality. Paper presented at the *12th International INU Study Day – Welfare and/or Health? 90 Years of Studies, Policies and Plans*, DiARC, University of Naples Federico II, Italy, 18 December 2020.

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<sup>5</sup> CONCEIÇÃO, Luiz (2018). Re-Dispersos de Arquitetura. ISMATISBN 978-989-97781-4-6. p.3

- Bordalo, A., & Rainha, A. P. (2022). The challenge of tele-education in pandemic context: The example of drawing and project studio. Abstract accepted for the *20th International Conference Architectonics: Mind, Land and Society – Environmental Urban (Digital) Design Education: The Bauhaus Case and the Interplay between Mind, Land and Society*, School of Architecture of Barcelona, Spain, 1–3 June 2022.
- Conceição, L. (2018). *Re-dispersos de arquitectura*. ISMAT.
- Rainha, A. P. (2021). Rewind to review: (Re)Educate through (research). Paper presented at the *RAPS Radicality Conference – Radical Architecture Practice for Sustainability*, University of Bristol, England (online), 17–18 September 2021.
- Rainha, A. P., & Bordalo, A. (2020). From scratch to space: A connection between draw and studio project. Paper presented at the *18th International Conference Architectonics Network: Mind, Land and Society – The New Sense of Place in Education, Profession and Social Interaction*, Polytechnic University of Catalonia (UPC), Barcelona, Spain, 3–5 June 2020.
- Rainha, A. P., & Pinto, M. M. (2024). Space behind abstraction: The metamorphosis of shape. Paper presented at *ICCAUA 2024 – 7th International Conference of Contemporary Affairs in Architecture and Urbanism*, Alanya HEP University, Alanya, Türkiye, 23–24 May 2024. <https://doi.org/10.38027/iccaua2024en0089>