

Learning to search

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“People always ask how do we get some results, rarely why. The first question belongs to those who want to do the same, to imitate; the second to those who search for understanding of the reason for the act, the desire that motivated it.”

Man Ray

Two questions lie at the origin of this paper and of the experience it describes: is it possible to efficiently perform an education that aims at developing a research attitude and at acquiring research abilities for second year students in architecture? How can we describe thoroughly, but concisely, such an educational (learning and teaching) experience?

The paper consists of the description of the process and students' and professor's critical comments. At the same time we will outline a possible framework for comparing different pedagogies in architectural design.

We have considered this experience as:

- an opportunity to raise and amplify students' interest in studying architecture and design;
- an intermediary phase in educating architects, an edification of a platform allowing and asking (only delineated) future developments;
- a panoramic opening to the contents of architecture and design, as well as to the learning paths.

Architecturally, we wanted to make students aware of the complex reality and of the ways to approach it, focusing on the “opening the eyes”, not only in a perceptive sense but in a wider one, conceptual, operational and emotional. Pedagogically, referring to the educational vision of John Dewey, we were trying to meddle in learning, thinking and researching¹.

We will comment here only on those aspects that deal directly with the development of a research attitude. Obviously, applying a didactic strategy asks permanent actions of re-evaluation and re-orientation, immediate decisions and actions, revisions and changes of routes, all conditioned by the specific aspects of the actual educational process.

The point of departure was the previous enquiry of students' capacities and motivation through a series of interviews² and by an overview of the content of their first year of studies. On the one hand, most of the students were strongly motivated for the study of architecture and exhibited a remarkable and diverse general intellectual development. On the other hand, their first year design education was directed toward basic design operations, especially focused on formal and graphical exercises³. At the same time, the interviews unveiled their lack of architectural orientation and of a personal educational project: they were just waiting to see what the school offered them.

¹ Fundamentally, Dewey states that we learn by thinking our experiences and that we think by searching the real problems we meet. Finally, we can imagine ways of solving them through the brought about reflection. See more in John Dewey – Democracy and Education. An Introduction to the Philosophy of Education, The Free Press, New York, 1916.

² Occasioned by the selection procedure of 30 students from the 60 demands.

³ A replica of Bauhaus education philosophy.

The didactic programme included four exercises, the didactic subjects of the second and third exercises being a part of the general programme of the school.

a. Architecture and building (the extension to an existing building)

Through the first exercise we wanted to confront them with the complexity of architectural reality (in contrast to the abstract character of the first year studies) and to take advantage of their acquired knowledge and abilities. We saw it as a further step in the already initiated “knowing each other” process.

The objective of the exercise (50 hours in 5 weeks) was to experiment design process (acknowledge and experiment basic aspects of design) by proposing a small scale operation, concentrating on construction (structural and material conception). They were asked to design the extension to an existing building (the British Council residence in Bucharest), occasioned by the need to accommodate more educational facilities (classrooms, multimedia, exhibition spaces, cafeteria, etc.).

The educational process consisted of common and research activities. The common ones were: site visit and critical comments on the existing situation, meeting the British architect of the previous intervention, several lectures (reasons of building actions, structural principles, interpretation of structural types and critical presentations of examples), preliminary and final reviews. The research activities aimed at developing a new understanding of the reality: questioning the existing situation from different standpoints, questioning students’ knowledge and actions.

The students designs resulted from the adaptation / imposition on the site of the compositional schemes experimented and acquired during the first year and from the use of new means of representation - model, CAAD, sketches, verbal. We encouraged them to develop personal intentions and we stimulated them to question their choices; a great diversity of attitudes emerged, ranging from understanding the pertinent significance of an extension to the incapacity to conceive more than a “solitary” object. Consequently, several themes were approached: main building versus extension, inner versus courtyard space, local operation versus neighbourhood, structural form versus materials, function versus meaning, etc. Some of them succeeded in formulating and developing an operational concept, others had difficulties in controlling elementary design aspects. The studio was the scene of meeting between different pedagogic approaches – the doctrinaire ones the students had faced during the first year of studies and a referential one consisting of the attempt to connect the reflection with action and learning with communication. The main problem was to challenge their already formed *habitus* of considering the architectural image as determinant in the design process. As a consequence, the intended reflection on building actions and on their architectural meaning had a weak development. Actually, they didn’t go very far beyond the “given” compositional schemes used previously, but this exercise showed quite clearly their level of motivation, their potential and limitations.

b. Architecture and form (a house on an imaginary site)

Through the second exercise we wanted them to correlate architectural intentions and means, a first tentative sketch of a design.

The initial objective of the exercise (70 hours in 7 weeks) was the exploration of the relation between the architectural space and its dweller. The students were instructed to focus on the

spatial experiences (sensations, perceptions and emotions) in a private ambient, trying to express a design vision reflected in several levels of the design. They were asked to design an individual dwelling on an imaginary site. During the initial phase of the exercise the students couldn't control at the same time the formal aspects and the implications of specific spatial experiences, difficulty amplified by the abstract context (generic site and user) they should have worked within. So we decided to re-orient the work toward another objective – to conceptualise design process through the experimentation of some formal architectural means (inner space, building, parts, light, order, etc.). We took this decision knowing that during the second semester the students would again approach the individual dwelling in a real context.

The educational process consisted of the exploration of an architectural object: looking for relevant references, interpreting data, establishing the state of the art and designing with references. It included surveys of individual dwelling problems and of their design within a one week seminar⁴, lectures on historical understanding of use and on examples of thematic use, spatial appropriation and experienced space, work at different design levels (from conceptual drawing to preliminary sketch and scale representations). The students performed design and learning procedures – schematisation, comparative analysis, conceptual design sequences, data collection and group presentation. They also discovered several sources of architectural knowledge. Through these actions the problem of individual dwelling was resituated in a historical and cultural perspective, the insight into the modernist tradition filled partly the students' lack of information and also it was revealed and questioned an automatism persistent in school (the relations between fashionable conveyed through professors' preferences and students' projects in the recent past).

The students responses had been developed around personal architectural references⁵, a personal cultural background, an imagined user profile or they had consisted of more vague searches (compositional schemes, structural order, etc.). It was actually their first “architectural design” including several constraints at the same time. As a consequence, even if it was accompanied by a more structured pedagogy, the studio work proved to be a painful, hard and risky experience (in this case, experimenting the manipulation of spatial determinants - form, proportion, hierarchy, light - and understanding the inner coherence of a “language”). It was probably the part of the year with most tension as their main previous convictions had been challenged (provoking informal debates) – the attraction of celebrity, the confidence in the value of graphic representation⁶. The partial freedom they had in choosing references proved to be a rewarding but responsible option. This experience showed that some students were able to chose their way of working themselves and to go beyond a “regular” dwelling design experience.

c. Architecture and context (a house on a real site)

The third exercise was an experimentation of design as a research tool and a test and an adaptation of the design thinking schemes used previously.

The objective of the exercise (80 hours in 8 weeks) was to contextualize design process: the identification of relations between the architectural intervention and its context (physical, social, cultural, etc.) The context was seen as an essential part of architectural design, which,

⁴ Group presentations on the following subjects: inhabitant - dwelling relationship, dwelling types, modern and contemporary examples - object analysis, the individual dwelling in Bucharest between the two world wars, individual dwellings in student designs of the last 30 years, dwellings in context, architectural space in modern dwelling.

⁵ From the examples studied in the first year, Le Corbusier, Adolf Loos, Tadao Ando, Luigi Snozzi, etc.

⁶ I intentionally exaggerated: “drawing doesn't mean anything!”.

in turn, was understood as a means of transforming a given situation. The subject was an individual dwelling located in the historical centre of Bucharest, a territory in current mutation (social, physical and cultural).

The educational process consisted of an exploration of an environment - urban references: questioning a problematic urban and architectural environment, acknowledging the emphasized importance of historical and social values. The students educated their eyes to perceive and interpret the urban complexity, discovered the identity of the area and its critical and unstable configurations that require an intervention and they tested different hypothesis of transformation (also in order to know its potential). Within the studio several specific investigative tools were used in order to have a first understanding of an urban phenomenon: a preliminary elementary analysis (sensitive, historical, morphological, typological and social), unfinished and prolonged, embedded into the design process, working at different scales (physical and meaning) and with various types of representation, lectures and field debates on the history of Bucharest (main periods and typical urban elements), on how to understand a place, on the relation between architecture and town.

Most of the students questioned the validity of their knowledge on an individual dwelling design, taking now into consideration a real context, real inhabitants and existing types of siting. The studio work had a more open structure: the students were the ones to chose the area to be studied and the precise locations of their interventions, as well as the dwelling types and programmes in respect to site potential. They had several opportunities to internalise the problems, to look for and to discover local rules, to experiment different attitudes towards these “rules” and to test them through their design, to imagine a diversity of dwelling types responding to the specificity of the studied area. We had observed a qualitative change in some students’ responses compared to the previous exercise: some of them dealt with more ease the abstract situation, focusing on formal aspects (as they possessed the capacity to formalise) and others the contextual one, focusing on actual constraints and experiences (as they possessed the capacity to intuitively understand reality). The main difficulty was making students more responsible as they had to structure their own work.

d. Architecture and use (re-conversion of an existing building)

The fourth exercise was an experimentation of the potential of *design as a brief making instrument*, a reflection on the interactions between architecture and user in terms of wider concerns like accessibility and sustainability, an initiation in teamwork and in communicating with professionals from other disciplines.

The objective of the exercise (40 hours in 4 weeks) was to link concepts and experience: to question the way how social use makes a building significant and to understand a temporary use as just a moment in a series of past and future destinations. The subject was the functional conversion of an existing building into a day nursery or into an educational centre for emotionally and socially affected children or into an educational centre for disabled children. There were only general requirements (minimal and maximal programme configurations), so the task included the definition of programme, at the same time with the problem of transforming the existing building.

The educational process consisted of the exploration of an environment - psycho – social references: questioning the nature of various requirements and their “contextual” validity. The students tried to understand the existing building, to identify its valuable characteristics, to define its potential use, to explore the adjustment of the functional requirements to the

building and to re-adapt the building to a specific use. Working within small groups, the students confronted the given programmatic requirements with the field observations – visits of the considered building and of existing children educational centres, interviews with experts. A lecture on concepts like destination, programme (specific requirements), ineffable needs, distributive schemata, actions versus activities, behaviour, outlined a theoretical background.

On the one hand, the students looked for the values of the existing building, not even listed as a monument - what to preserve, what to exploit, which occupation and what suitable transformation strategy? On the other hand, they identified “stronger” and “softer” requirements (not as quantitative but as qualitative demands) - what lies behind a number of square meters? why does these requirements exist? These requirements had been related to various behaviour of children (similar or different in the three instances), at the same time with the operation of accommodating them into the existing building. They realised that there are never univocal or literal transfers but contextual connections at every level. During the process, several types of representation were used (at their choice) according to their relevance, the dialogue between students had become more important and, at the same time, there was more tension⁷, as they had to explicit their approach and strategy. This helped them to attempt to create ambiances appropriated to each destination (how to satisfy a quantitative demand through an ambient quality).

The main difficulty was to make students aware of the co-operative side of design process, though a few of them extended their questioning meeting specialists from other fields (health, psychology, sociology).

e. Perceptions and evaluation

Students' comments

The students' perception on this educational sequence was expressed through answers to questionnaires at the end of every semester. There was a diversity of opinions (some aspects being judged positively by some students and negatively by others), approving ones being followed by critiques and suggestions⁸. But here we will confine ourselves to comment on those related to the subject of this paper. The students expressed their opinions mainly on the architectural and pedagogical content and secondly on wider aspects such as attitudes and behaviour.

On the one hand, they appreciated the efforts to form and develop architectural thinking, a reflexive and questioning attitude, but they found professor's attitude too critical and not encouraging enough during the process; also they had considered the pedagogical discourse too theorizing⁹, not always meeting their need to receive precise indications for immediate actions (they were expecting professors to make more decisions). They valued the thematic diversity and the progressive approach to architectural complexity, but they considered more attention should have been granted to the architectural detailing. They welcomed the sometimes tense but open way of communication, the personalized support and informal education (suggestion of readings, lines of reflection, comments on each student's evolution), but they needed more help to develop their work ethic. Most of them thought they didn't have enough time for fulfilling the studio tasks within such a time consuming pedagogy. But the

⁷ I identified various types - hierarchical, complementary and disputing teams.

⁸ “I don't agree with the differentiated treatment of students – some had better and constructive critiques of their design schemes.”

⁹ Of course, their observations should be interpreted in school context, beside their peculiar understanding of the situation.

most encouraging answer belonged to a great majority, expressing the significant increase of their interest for architectural design and for the complementary fields (building, theory, history).

On the other hand they have realized significant changes in their behaviour and attitudes: they looked differently at the surrounding reality (architectural or not), they developed a stronger sense of responsibility, they learned to question their actions, to argue and to criticise and then to make a decision.

Our comments

During the learning process the students have experienced several actions:

- including disparate criteria and requirements into their reflection and in decision making (beside the exclusive compositional ones considered at the beginning of the year);
- selecting appropriate precedents and working with them;
- questioning an existing situation and discovering problems;
- testing alternative hypotheses.

To a certain degree they succeeded in controlling the link between intentions and design actions and the relation between an architectural action and its context (in a wide sense). We think the greatest difficulty was that of reshaping the students' high-school beliefs, looking for one solution to every problem in a naive "right or wrong" vision. A small number of students enhanced group dynamic throughout the year so, at the end, most of them proved to have a more structured perspective, and even clear interests for their near educational future - they wanted to learn more and within more defined areas. Of course, all these new developed capacities have to be deepened and enforced by other future similar experiences (a common pedagogical "rule"). Dealing with a wide range of architectural and pedagogical issues led to an acknowledged degree of superficiality. It was a choice that can be understood in the peculiar context of the school – imposed timetable and partly imposed subjects, a narrow profile of the second cycle architectural design education. In another school the program would have been differently structured.

In general, we think this experience argues that architectural education can aim not only at transmitting design techniques and subsequent knowledge, but also at developing attitudes and capacities such as: the desire to explore the possible, the sensibility to observe peculiar phenomenon, the global vision, independent thinking, creativity, etc., and even the capacity to look for, to find and interpret various types of data and finally to establish the state of the art of a peculiar field. Learning to search, as "research" in general, seems to be a risky and controversial enterprise developed in uncertainty, asking a strong psycho-emotional involvement.

f. Conclusions

This experience could be synthetically described according to the following criteria: pedagogical intentions, objectives, subject, educational process (learning to search), students' actions, students' results (during the process), psycho-pedagogical problems. The following table (see table A) allows two main types of lecture, horizontally - corresponding to an educational sequence - and vertically – corresponding to the succession of each criteria. For example, first, on each row we can appreciate the pedagogic coherence between an objective and the educational process or between intentions and results. Second, on a column we can detect the evolution of each aspect, as the column of objectives shows a certain progression

from experimentation to conceptualisation and then to contextualisation of design process, finishing with the link between concepts and experience.

This experiment and its description framework (that enriches the “regular” presentation of the didactic programs) could be interesting from several points of view:

- it brings into attention student’s learning problems;
- it unveils what actually happened in the studio;
- it emphasizes the ways used to adapt the initial strategy to a responsive context;
- it offers to other successive professors the opportunity to know more about their students knowledge, capacities and attitudes.

It also opens future, more systematic and interdisciplinary lines of research: describing different pedagogical experiments with a similar set of criteria and thus having the possibility of their comparison; looking for similar learning difficulties faced by students in architectural design (how to start a design process, how to design and how to learn at the same time, how to communicate architecturally with the others, how to connect studio and courses pedagogies, etc.)

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	Pedagogical intentions	Objectives	Subject	Educational process	Students' actions	Students' results	Psycho-pedagogical problem
0	preliminary knowledge of students' capacities and motivation	initiate the dialogue	Interviews and overview of the content of their first year of studies		express their motivation and interests in architecture	strongly motivated for the study of architecture and a remarkable and diverse general intellectual development; control of basic design operations	lack of architectural orientation and of a personal educational project
Ex.1 (50h)	confront them with the complexity of architectural reality take advantage of their acquired knowledge and abilities	experiment design process (acknowledge and experiment basic aspects of design)	design the extension to an existing edifice	observing reality (questioning the existing situation from different standpoints, questioning students' knowledge and actions)	adaptation / imposition to the site of the compositional schemes previously acquired working with new means of representation	from understanding the pertinent meaning of an extension to the incapacity to conceive more than a "solitary" object; some of them succeeded to formulate and develop an operational concept, others had difficulties in controlling elementary design aspects	challenge their already formed <i>habitus</i> of considering the architectural image as determinant in the design process
Ex.2 (70h)	correlate architectural intentions and means (first tentative sketch of a design)	conceptualise design process (experimentation of some formal arch. means - inner space, building, parts, light, order, etc.)	design a house on an imaginary site	exploring an architectural object (looking for relevant references, interpreting data, establishing the state of the art and designing with references)	designing and learning procedures (schematisation, comparative analysis, conceptual design sequences, data collection and group presentation); discover sources of architectural knowledge	developed around personal architectural references, a personal cultural background, an imagined user profile or consisting of more vague searches (compositional schemes, structural order, etc.)	challenge students' attraction of celebrated architecture and their confidence in the value of graphic representation
Ex.3 (80h)	experimentation of design as a research instrument testing and tuning the design thinking schemes used previously	contextualize design process (the identification of relations between the architectural intervention and its context - physical, social, cultural, etc.)	design a house in a historical centre	exploring an environment - urban references (questioning a problematic urban and architectural environment, acknowledging the emphasized importance of historical and social values)	educating the eye to perceive and interpret the urban complexity; discovering the identity of the area and its critical and unstable configurations that require an intervention; testing different hypothesis of transformation	a qualitative change in some students' responses: some of them dealt with more ease the abstract situation, focusing on formal aspects and others the contextual one, focusing on actual constraints and experiences	making students more responsible by asking them to structure their work
Ex.4 (40h)	experimentation of the potential of design as a brief making instrument; reflection on the interactions between architecture and user; initiation in teamwork	link concepts and experience (question the way how social use makes a building significant and understand a temporary use as just a moment in a series of past and future destinations	re-conversion of an existing building	exploration of an environment - psycho – social references (questioning the nature of various requirements and their "contextual" validity)	understanding the existing building; identifying its valuable characteristics; defining its potential use exploring the adjustment of the functional requirements to the building and re-adapting the building to a specific use	they realised that there are never univocal or literal transfers but contextual connections at every level	making students aware of the co-operative side of design process

