

DRAWING AS A LEARNING SYSTEM OF ARCHITECTURAL HERITAGE

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Abstract:

In graduate architecture studies, different aspects of heritage and conservation are commonly taught unconnected, and the genuine articulation of all of the disciplines is only integrated in the more specific master classes. The disciplines that address the issues relating to heritage are mainly history, the theory of restoration or those that affect the pathology and rehabilitation aspects of construction, and all of these are taught in advanced diploma courses. However, it is interesting to note that already from the first courses, it is possible to influence and raise awareness concerning heritage studies degrees in architecture.

In the School of Architecture of Alcalá, part of a historic world heritage site declared by UNESCO, we are determined to push this sensitivity from the early training years, combining the teaching of these introductory courses, including courses in drawing, using the city’s vast heritage and the university as a teaching subject discipline, but also as a specific subject to instil certain sensibilities and attitudes toward architectural conservation.

Concerning the teaching of drawing in architecture, in the early years, the problem is commonly approached on the most descriptive and morphological levels of representation, limiting the picture to a series of technical drawing conventions, independent of the object work. In this way, there would be no specific differences between the graphical representations of contemporary buildings and historic buildings.

The indiscriminate use of CAD systems in this interpretation of architectural drawings poses some problems, for example, concerning the expression of the differences between traces of an industrial architecture compared to those resulting from manual production, not to mention the differences in materials between contemporary architecture and those for which the patina of time has passed. The concepts of urban and environmental integration, typical of the historic city, are related to issues concerning the concept of monument, the concept of time and the value of seniority, and are linked more to perception than to mere morphological representation. It is essential to transform the “descriptive” representation into other more sensitive, deliberate and analytical representations in order to generate a comprehensive understanding of the most important aspects affecting architectural heritage.

For centuries, architectural drawing has been a part of the traditional teaching system in architecture studies. Both in reference to the instrumental systems necessary for the learning process, such as the drawing itself, and in reference to the teaching of the project or history of architecture, drawing has been used for centuries to systematically study constructions, or what is currently known as architectural heritage. In many cases, the way this heritage was drawn was not only an exercise in graphic dimensional reconstruction, but also an analysis of architecture’s intrinsic qualities. These drawings constituted a way of understanding these qualities and would later be used as a reference for new projects.

During the classical period, the Roman architectural legacy was the graphic reference and object of study. In the Renaissance, the representation of antiquity constituted the conquest of the figurative autonomy of the drawing over pictorial representation, both in terms of the linear representation of the perspectives (Ghirlandaio, Dosio, Peruzzi) and in the use of orthographic projections (Serlio, Palladio), until the first complex drawings related to cross-sections (Rafaello) and axonometrics appeared. In the seventeenth century, Vignola and Perrault used drawings from antiquity as references in the development of their theories; these also included ruins in the pictorial imagery of artists like Claudio de Lorena, adding scenic value to architectural heritage. Desgodetz was

the first to develop a systematic and scientific study of Roman architectural heritage, laying down the foundations of modern architectural survey drawing. In the eighteenth century, interest for constructed heritage extended throughout the Mediterranean, and the ruins in Greece (Stuart & Revett, *Le Roy*), Dalmatia (R. Adam, *Clerisseau*) and the Middle East (R. Wood) were rediscovered and appreciated. In addition, this appreciation for architectural heritage was consolidated and developed both in its scientific-archaeological aspects through survey drawings as well as in its aesthetic-scenic aspects, which characterise and make the location unique. This added value was made patent by the double language Piranesi used to describe the Roman ruins with constructive precision and to express the spectacular images that transformed these into presences that were intrinsically tied to the place in which they were located. In the nineteenth century, it is evident that a double language existed, and was expressed through drawings, to describe architectural heritage which, with the disappearance of the classical reference, extended to all styles and eras (Lewis, *Violet le Duc*) and was defined either through precise scientific-archaeological reproductions or drawings in which the ruins were the object of contemplation, transmitting memory and characterising the location and landscape (1).

Throughout time, architectural studies have, more or less, followed the same historic paths described above. Drawings that basically reproduced typified models, orders and archetypes during the classical period evolved into a study of the monument defined by two aspects, one that is scientific-analytical and another that is aesthetic-scenic, as two different ways of understanding the architectural legacy. This duality was also reflected in the development of twentieth century courses of study that basically divided architectural drawing, and consequently the drawing of architectural heritage, into two distinct spheres: “technical” drawing that consisted basically in defining the dimensional qualities of the object by using measurable systems of representation (basically, projections) and “artistic” drawing focused on expressing architectural qualities more closely tied to perception than description.

The decrease in study times, the introduction of digital systems and photography, as well as the discontinuance of the use of manual drafting as a work system, led to the redevelopment of the methods used to teach drawing and the way in which heritage was represented, leading the way to a restructuring that involved, on one hand, the acceptance of drawing as a complex and comprehensive system capable of combining metric and dimensional qualities with sensitive-perceptive qualities and, on the other hand, the interrelation of the concepts of dimensional representation (related more to traditional graphic disciplines) to other aspects related to the culture of antiquity and conservation, more in line with subjects including architectural restoration, history or composition. As such, architectural drawing, which is usually taken during the first year of university, was transformed from a merely instrumental subject into a system of the knowledge of heritage and, through this, a system of knowledge of certain values of architecture and its legacy.

The adoption of this model seemed adequate for a School of Architecture like the one in the University of Alcalá, located in a historic centre designated a World Heritage Site, where architectural references are not only in plain sight, but are actually an intrinsic part of the university and the school itself, located in a seventeenth century convent. When designing the first-year architectural drawing course, it was decided that, apart from structuring the course in line with this comprehensive system of the concept of architectural drawing, conceptual proposals would be incorporated at the end of the course to introduce disciplines related to knowledge of ideation drawings, focused precisely on approaching a project from the perspective of its ties to architectural heritage (2).

Evidently, using drawing as a complex, multidimensional system of representation of architectural reality requires certain instrumental preparation. As such, it was decided that the first quarter would be dedicated exclusively to basic preparatory studies (representation systems, geometry, notions of visual perspective), and more intentional, hermeneutic drawing would be imparted during the second quarter, developed in three spheres: defining the architecture’s intrinsic qualities, taking the first steps in drawing with regard to concept and communicating results in a reliable and attractive manner.

Understanding that the student works with, but does not master, basic graphic variables, Architectural Drawing, particularly during the second quarter, should be transformed into a field of interpretive work and analysis of the empirical values of the architectural object, while also guiding the student in his/her first attempts at defining the architectural process and its graphic instrumentality in the conception of architecture.

The first assignments during this second quarter will be developed based on the knowledge of a certain historic architectural object or environment in Alcalá, increasing both the depth of conceptual interpretation and the quality of its expression and graphic representation, compared to the first quarter. This architectural knowledge involves the establishment of sufficient graphic correspondence between the architecture and its representation,

without forgetting its empirical aspects, in order to achieve a set of graphic documents that, without doubt or errors, can reliably interpret the architectural fact while, at the same time, suggest its presence and reproduce the visual and sensitive relations it establishes with the individual. The first drawings will respond to this approach, and these may initially be expressive explorations of the acknowledgement of the environment, but should later be transformed into a representation or set of representations that sufficiently explain the architecture and the observer's intentions when interpreting and representing it (which could be referred to as conventional intentional representation), within the specific nature of treating an object of architectural heritage (3).

Three spheres of action can be defined to develop these objectives:

- The first would involve collecting data about the object or place of study. This data may be perceptual and visual, metric or dimensional. The necessary graphic tools will be used for this purpose, both those that refer to the expression and representation of the empirical space, as well as those that refer to the representation of the physical and geometric space.

- The second would involve the intentional evaluation of the data collected to establish criteria for segregation, distinction and order in the representation of said architecture, transposing them graphically into identifiable codes. This is when the concept of the physical scale appears as a metric relation between real and represented dimensions, or relation of proportions (scale of the location, of the architecture, of the architectural element), as well as the conceptual scale or the relationship between the observer and the representation, which depends on the amount and quality of the information to be supplied.

- The third would be defined by other types of analytical exploration, where the different structure, parts and processes into which the studied architecture may be divided are evaluated sensitively and separately. These analyses must be referred to in the entire drawing process and intentional evaluation of the architecture that should be completed during Architectural Drawing studies.

In order to develop these activities, the student should first have solid knowledge of the space and architectural object studied, consisting in solid, direct, reliable, proven and objective representation, but also in a variety of sketches done using the intuitive-expressive approach that allow the author to differentiate between what is and is not relevant and worthy of attention, and what is anecdotal or superficial. These last drawings and sketches may also turn into the first attempt at what will subsequently be understood as conceptual drawing, because the expressive approach in the search for certain personal understanding of the different architectural spheres is a basic component of memory's visual archives and may also turn into images, bases and references that unleash architectural creation. This way, the student develops basic graphic exploratory skills both on a conceptual and instrumental level.

First, there is the development of a perceptual approach to the architectural object studied thanks to the collection of perceptual data to signify the formal, spatial and environmental qualities of the area (scale, dimensions, proportion, geometry), and the environmental qualities of the architecture (light, colour, texture, material) through codification, representation and graphic expression. This collection of data is a combination of all the graphic conventions (linear perspective, visual perspective, plans, cross-sections), in order to understand the problem, although the resolution is mainly assigned to the more perceptual representations during this phase, fundamentally views and drawn perspectives and photographs of the location.

Second, knowledge of the studied object's measurements and dimensions is developed by completing architectural drawings that include measuring the object by means of unsophisticated methods (tape measures, distance metres), the study of the existing graphic documentation, both recent and historic (if it is a renovated building), the building's historic analysis and its evolution, the compositional analysis and its closest references and, last, the compilation of a complete set of plans (ground plans, cross-sections, elevations and axonometrics), intentional in nature, where importance is placed on the correct understanding of the building's volume, but also on the expression of its historic nature (reflected in the passage of time on the materials, the non-industrial character of the finishes and the dimensional deviations due to imprecise methods used to construct or lay out the building or deformities due to the passing of time). Furthermore, the objective is to avoid redundancies and not fall prey to obsessive and monotonous draftsmanship, and the document should interrelate all types of projections, avoiding symmetries or systematic repetitions, common in these types of buildings.

A graphic, analytical interpretation will be developed based on the collection of perceptual and dimensional data about the architectural object, evaluating the architectural space described in the data collection exercises, with special emphasis on the spatial interpretation of these data. This way, architecture can be understood as a complex spatial-temporal experience. Drawing, in this case, is used as an instrument that integrates the partial knowledge acquired during the data collection and survey exercises, combining the architecture's physical qualities with the personal "impressions." The objective is to explore the primary relations between the elements

of a given space-object, establishing the hierarchies and order between them, separating the architecture's elements and spatial qualities, giving them a relative value and signifying their importance within the context. The first drawings of the space's basic qualities are prepared during this phase and are necessarily analytical, in order to generate a graphic base on which to operate in the following conceptual process.

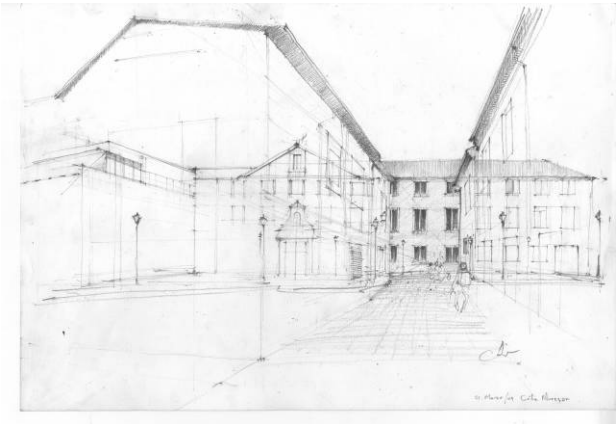
The last phase to be developed is a project of the historic building. On one hand, the objective is to develop some methodological assumptions to begin the project, from the graphic point of view and, on the other hand, the approach should formally address certain issues related to the problem of integrating the modern project with the pre-existing project. The work is based on the preliminary sketches produced as a consequence of the analysis of some of the building's parameters that will act as graphic catalysts. This work graphically corresponds to conceptual sketches based on organisational and functional frameworks, but also to drawings and sketches that are metrically and dimensionally proportionate.

With this process of the generation of architecture, at the end of the course, the open process begun with the representation of the empirical space (the place) concludes with a return to representation, but this time, of the imagined space (the project). As such, the flow from expression to interpretation and conception is understood as a circular system that increases the projected architecture's definition and concreteness with each cycle. The way in which this process is assimilated, interiorised and modified by the student will characterise the student's own personality when creating architectural projects. Addressing the problem of the project from the beginning like a problem that concerns pre-existing elements is, to our understanding, a very realistic approach to current professional demands, a more complex way of beginning architectural studies although much more realistic than studying decontextualised places, common in schools of architecture.

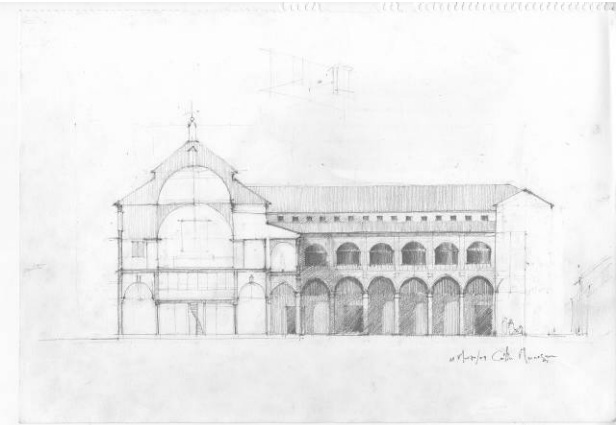
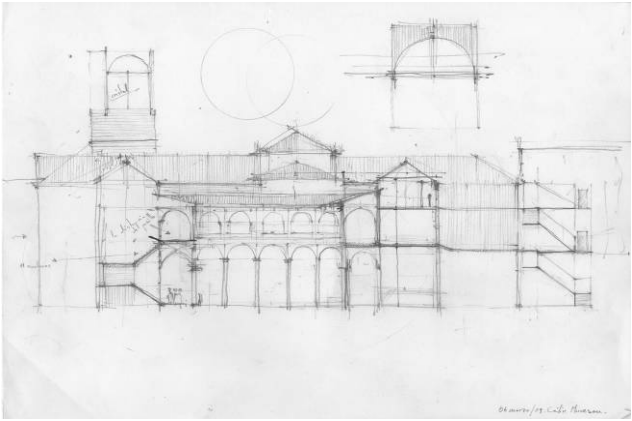
The last point refers to the graphic techniques used in these exercises. In general, the exercises are planned in such a way that the student's margin of freedom increases as he/she becomes more confident with the medium. Some techniques are more suitable than others, depending on the type of drawing required. In general, the more expressive the drawing, the larger the variety of possible techniques. The degree of expressivity decreases as more precision is required. An important issue concerns the use of graphic digital technologies (CAD, photomontage) as alternatives to or complements for the more traditional techniques. In this case, it is important to observe that the configuration of the historic buildings themselves (asymmetries, deformities, deterioration) means that the digital instruments should be handled with care, because these are usually used to represent "industrialised" architecture (precise, straight, not deformed). Transferring the qualities of historic buildings to digital plans and comparing these to traditional plans is an excellent way of studying both the required rigour in the representation of architectural heritage, and the search for resources capable of making it a reality.

- (1) Celis, F., *El dibujo de la Antigüedad*, Academia Española de Historia, Arqueología y Bellas Artes, Roma, 1996, 24-27.
- (2) Celis, F., Goycoolea, R., *Alcalá, la experiencia gráfica en una nueva escuela*, Revista EGA nº6, Valencia, 2001, 114-116
- (3) Echeverría, E., "Colegio Convento de nuestra Señora del Carmen de los Carmelitas Calzados", *Universidad de Alcalá: de las armas a las letras*, Alcalá, 2010, 179-185.

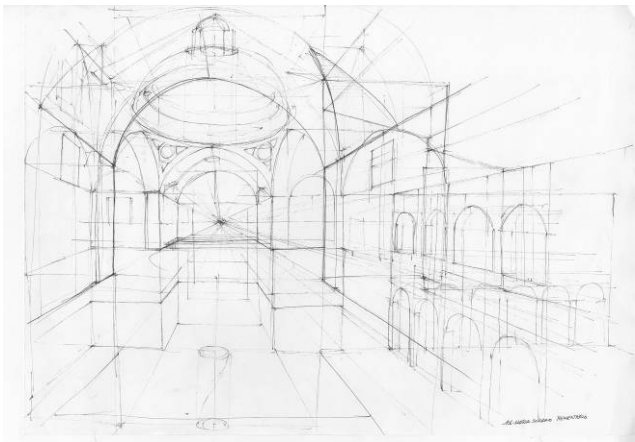
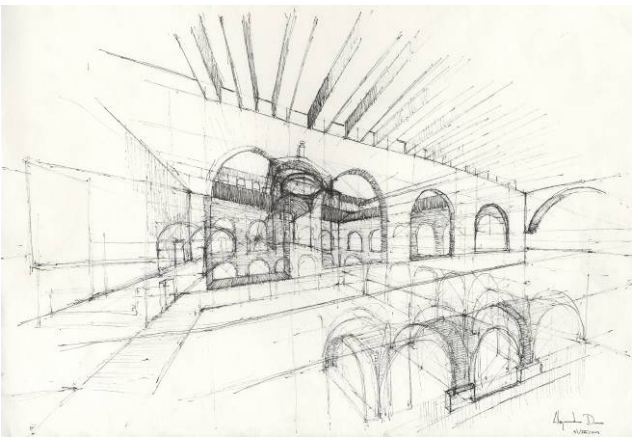
Phase 1, Perceptive drawings



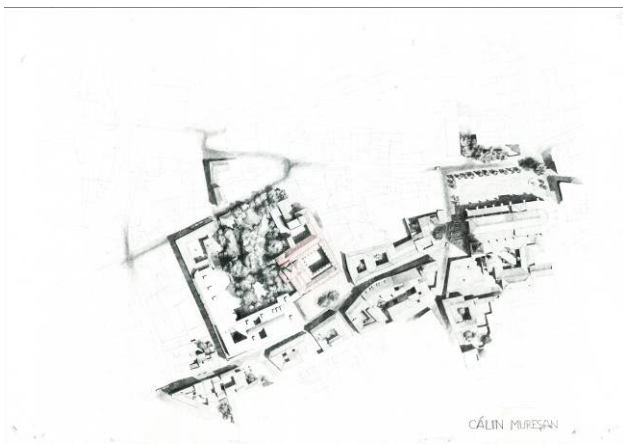
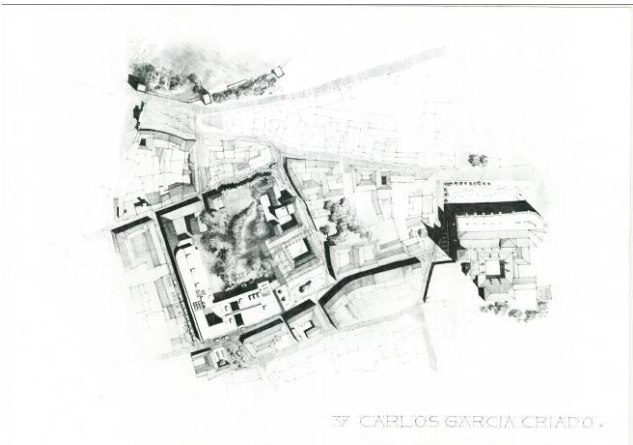
Phase 2, Data collection



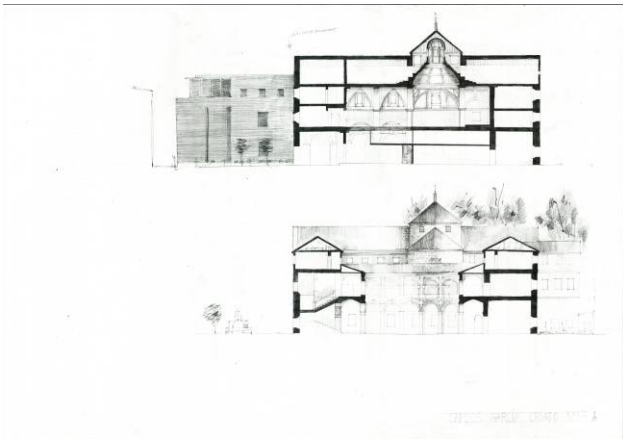
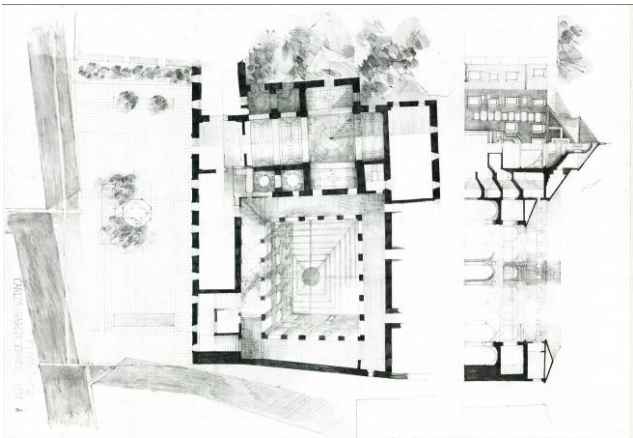
Phase 3, Spatial interpretation



Phase 4, Urban land survey



Phase 5, Architectural survey



Phase 6, Proposal

