

3D Exquisite Corpse: Drawing as a Thinking Tool

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Undoubtedly, drawing has played a fundamental role on the most radical experiments in the history of architecture. However, the understanding of drawing as a mere representative tool has seriously damaged its relevance in the last years. In addition, the discipline of architecture has dramatically changed with the irruption of new computational technologies, leading to a progressive disappearance of the “traditional” drawing from the curriculum of many Schools of Architecture. From our perspective, the drawing provides more than the sole representation and cannot be enclosed in a single technique. It promotes creativity, expressiveness and a critical view of reality. It is an essential tool of expression, creation, and architectural criticism, that substantiates the architectural pedagogy.

At the 2019 Fall Conference “Less talk more action”, we took the chance to create a performative and collaborative experience by building an “Exquisite Corpse” with the drawings generated by the participants. Triggering images of paintings belonging to European Avantgarde Movements (Twentieth Century) were displayed on the screen, while the participants made their own interpretations. The resulting drawings were transformed into three-dimensional pieces, through simple operations such as folding, cutting or bending and finally they became part of the whole body of the “Exquisite Corpse”, following the directions established by the authors.

This action is a synthesis of an extensive practice developed in the past years at the School of Architecture of Madrid, UPM, where drawing still plays a fundamental role in the curriculum. We also had the chance to test this pedagogy in a different context, in a collaboration with the School of Architecture, at Woodbury University. The experience of introducing hybrid techniques (analog-to-digital) into a purely digital environment, was extremely triggering. In our opinion, it provided the students with alternative strategies of conceptualization and expression of their ideas and thoughts, focusing on the development of a creative process from a different perspective. The present paper will analyze the results of these experiences and the importance of drawing on what we call “critical learning”.

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THE IMPORTANCE OF DRAWING. EVOLUTION

When discussing about “drawing” and its current situation in the contemporary architecture, it is fundamental to acknowledge the changing context in which drawing is produced, displayed and communicated. The discussion must necessarily include reflections on contemporary technologies, emerging practices and the history of drawing itself.

First of all, it is a fact that the emergence of the digital tools has had a great impact on the contemporary architectural context. Many authors have discussed the role of drawing in this scenario, especially in recent years. In 2012, the Yale School of Architecture held a symposium on the crisis of drawing and its place in architecture (1). Under the title “*Is drawing dead?*” the symposium explored the evolution of the drawing practice from being a “*primary instrument of investigation and expression*” to being overshadowed by the proliferation of other sophisticated digital tools, such as parametric modeling, computational design, digital design and fabrication, and Building Information Management (BIM). No definitive conclusions were achieved, but the passionate defense of confronted positions delivered by quite relevant speakers (such as Michael Graves, Peter Cook, Patrik Schumacher, Greg Lynn or Mario Carpo) shows that the question is exceedingly alive. Victor Agran (Yale faculty member that organized the symposium together with George Knight) noted that “*In the profession we find ourselves in an interesting moment: As digital technology increases the capacity of architects and students to study and craft space, the means and methods of delineating that space are expanding exponentially. (...) The proliferation of programs has its advantages in our ability to be creative and generate work, however the rapid proliferation of programs and different methods of operation can be confusing and there is no common standard and language of expression. The drawing conventions and modes of visual communication that held for 500 years have been eroded.*” (2)

Other experts, such as David Ross Scheer have directly stated “*The death of drawing*” (3) due to the eruption of computational drawing as a design and communication medium in architecture. The author considers that drawing allows representing ideas in form, whereas computational design can simulate experience, anticipating the behavior of the building. Nevertheless, the author remarks some issues affected by



Figure 1. Instant City, 1968, Ron Herron.

this dichotomy: *“the dominance of performance criteria in the evaluation of design decisions; the blurring of the separation of design and construction; the undermining of architects’ authority over their projects by automated information sharing; the elimination of the human body as the common foundation of design and experience; the transformation of the meaning of geometry when it is performed by computers; the changing nature of design when it requires computation or is done by a digitally-enabled collaboration”*. Along the book, he examines the practical consequences of these changes in architecture.

In our opinion, the preconception of the drawing as a mere representative tool, is the main reason for the progressive disappearance of the “analogue” drawing from the curriculum of the Schools of Architecture around the world.

However, the drawing has played a central role on the most radical experiments in the history of architecture, as it promotes creativity, expressiveness and, more importantly, a critical view of reality. It was already in the Renaissance, when the insertion of perspective modified the conception of the space in architecture. The book *“Drawing Futures”* (4) explains that *“Drawing soon became a technical tool, an instrument of codification that organized proportion and order (...). The idea of a ‘creative architecture’, of an experimental architectural aesthetic that privileges drawing as an expressive tool, emerged less than a century ago. Aside from the utopian drawings of the eighteenth century – the visionary expressions of Boullée or Ledoux and the unlikely prisons of Piranesi – drawing found its true expressive value when space was liberated and it could become a free domain, an open field. The various movements of the modern avant-garde sought to make the drawing an instrument both critical and creative”*.

The Twentieth century represented a breakthrough in the history of architecture and drawing. The revolutionary socio-political movements that emerged during the decades of the 60s, 70s and 80s, were accompanied by a period of an incredible creativity explosion in the architectural panorama.

The graphic proposals developed by utopian groups such as Archigram (figure 1) or Superstudio, together with the productions of authors such as Stanley Tigerman, Hans Hollein or Nils Ole Lund, represented a great example of the expressive capacity of drawing and its potential as a tool of criticism (figure 2). These drawings illustrate the possibilities of the combination of different techniques and the success of these communicative strategies.



Figure 2. Superstructure over Manhattan, Hans Hollein, 1963

They also promoted the emergence of innovative and open pedagogies in some of the most progressive Schools of Architecture around the world. In her project *“Radical Pedagogies”* (2012 -nowadays), Beatriz Colomina and a team of PhD students of the School of Architecture at Princeton University, explore a *“series of intense but short-lived experiments in architectural education that profoundly transformed the landscape, methods and politics of the discipline in the post-WWII years. (...) They constructed a new space for redefinition of the discipline, launching a series of pedagogical experiments that shared a strong belief in architectural education as a tool towards political change”* (5).

Our interest in these movements is related with the creative discourse they built to express and communicate their theoretical approaches. The success of these open pedagogies was determined by two fundamental factors: the students' motivation and implication in the process and their predisposition to embrace indeterminacy and uncertainty when opening unknown creative paths. As evidenced in these experiments, drawing in architecture comprises analysis, ideation, content development, communication, transformation and encouragement. It implements creativity, imagination and criticism, and enables a fundamental concept for the evolution of architecture: *the creative thinking*.

As educators, we believe that our mission is to help our students find their own path, their own design strategies, when initiating a creative graphic process linked to the production of an architectural object. To achieve that goal, they first need to acquire a certain critical thinking that allows them to substantiate their decisions on solid criteria. Professor Jose A. Marina defines talent as "*the triumphant intelligence*" (6). From his perspective, discovering hidden talent implies a part of knowledge, a part of feeling, and a part related to the executive function of the brain. Creativity necessarily means innovation, understood as the ability to produce new solutions to previously known problems, which is precisely our intention when proposing the students to start a design process in architecture.

There is a classic preconception that creativity is a certain random process in which the "creator" waits patiently for the arrival of the "muse" but, as Picasso explained "*inspiration exists, but it has to find us working*". In our opinion, the strategies that trigger the ignition of the creative process, are usually systematic and based on a constant and intense working process.

One of the key concepts of creative learning is that its success relies on the preparedness and the ability of each individual. Designing and creating are not fully conscious actions; they imply fast decision-making, responding both to rational and emotional impulses. Objective and measurable data are mixed up with personal experiences, expectations and desires that can hardly be standardized. This particular issue is one of the greatest complexities when teaching creative subjects.

We strongly consider that the act of drawing works as an operational trigger and a comprehensive / productive tool in the design process. It has the quality to operate as a link between the rational thinking (analytic drawing) and the emotional one (expressive drawing) and gather them together as two parts of a unique process. Drawing involves the learning of a graphic language, but also the assimilation of other skills linked to the creative and productive discourse. Certainly, the act of drawing helps to arise creativity.

Architecture is a discipline halfway between art and technique, which transforms a physical environment to host human behaviors, designed with the highest functional, technical and esthetic levels. The architectural project is a simulation of this transformation, that articulates different disciplines along the process. The communicative strategies to follow with the multiple agents involved, are extremely different and specific and our mission as instructors, is to provide the students with a wide variety of expressive and communicative tools.

EXPERIENCE OF DRAWING IN AN ANALOG-BASED ACADEMIC PROGRAM

Along this paragraph, we describe the methodologies followed at the Architectural Graphic Ideation Department of the School of Architecture of Madrid, Spain (ETSAM, UPM), regarding drawing and architecture, specifically during the first and second semester of Bachelor's Degree in Architecture, at the "*Drawing, Analysis and Ideation*" Workshop. The sole existence of this department indicates that, in this particular School, drawing keeps on having a solid and preponderant position in the design, development and communication of architecture.

Naturally, the ETSAM is not indifferent to the computerization of design processes. We understand (and celebrate) that the contemporary practice of architecture is, essentially, an interdisciplinary endeavor, where audio-visual media and digital technologies play a crucial role in the creation of spatial experiences. Computational systems have three main weaknesses: the loss of the relationship between the human body and architecture, the difficulty to follow alternative/parallel processes (it necessarily leads to linear processes) and the lack of stimulation of critical thinking and, therefore, creativity. Those three issues are coincidentally the major strengths of drawing, defined as a thinking tool for architects. Therefore, we encourage the smart and controlled combination of the different techniques, especially hybrid (analog-to-digital) processes. We consider that it generates an exponential improvement of architectural education and creates the necessary link between means and production.

In these workshops, our intention is to encourage a different approximation to the graphic work, free from preconceptions, placing the value in the process and not so much in the result. As mentioned previously, we understand drawing as a design tool that helps the students to acquire their own creative personality. The students confront the design process, in the different stages of generation, comprehension and communication through an own and personal graphic language.

"*Drawing architecture*", as well as "*designing architecture*" are researching processes based of graphic operations that pretend to build observable realities. We need to deal with a certain level of uncertainty, necessary for creativity to arise, focusing on the process and not on the results, as above mentioned. The milestone is to provide the students with the optimal tools to

complete three basic learning stages: “*learn to see*”, to promote a graphic research on the project; “*learn to do*”, to experiment with various graphic techniques that enhance their imaginary capacities and, finally, “*learn to communicate*” to implement the interaction of the design with different agents (clients, corporations, administrations, colleagues, etc.)

One of the main features of a creative learning consists in the development of strategies that allow the students to make an adequate use of their knowledge and experience to face the challenges ahead. As we all know, in architecture, it is fundamental to learn how to build a graphic creative process.

The ultimate goal of our teaching approach is not restricted to obtain a final graphic production as a result of a methodological translation; the goal is to provide the students with those working mechanisms that will act as a design triggers. This means the understanding of the drawing as a “thinking tool”. “*Thinking while drawing*” implies not only a continuous movement of action-reflection on the traces of the previous production, but also a permanent learning, that helps to assimilate the transit from intuition to reflection.

This kind of proactive pedagogies must necessary count on a proactive attitude from the students, as they require a great effort and dedication. The emergence of talent is directly related with these qualities, together with the ability to process the information and the creativity to develop an evolutive process (7). The concept of “talent” is not linked anymore with the ability to faithfully reproduce a figurative image, but with the ability to build a creative thinking, which implies curiosity, intuition, emotion, language, memory, experience and, of course, drawing skills, as it is the main tool used during the whole process. In addition, it is fundamental to count on a high level of self-criticism and self-commitment.

Certainly, these procedures need to be taught and persistently practiced, to be internalized. The first step is to modify the expectations of the students, accustomed to the immediacy of results, during the school years. In the last time, we have detected that there is an increasing incapacity to deal with uncertainty and vagueness, which are two fundamental ingredients for creativity. Often, in the early stages, many students develop frustration and anxiety when confronting the blank paper. We try to address this issue through the implementation of fast and triggering actions.

Each semester is divided into three learning cycles, to progressively deepen in the active processes that conform the architectural and spatial creation. The knowledge acquired and the skills required are accumulative, so the students gradually overcome the successive stages. For that reason, we start the semester with the development of strategies focused on three different objectives: the improvement of drawing skills, the acquisition of a basic visual culture and the immersion of

the students into a creative process. Effectively, this proposal is translated into guided exercises, starting with the implementation of fast, big-format, speculative drawings that mutate into more paused interventions, that offer different readings and trigger the next step of the graphic process (figure 3).



Figure 3. Students' work, DAI 1, Core First Year Studio. ETSAM, UPM. 2017-2018.

The “academic” (or traditional) instruction of artistic fields was based on repetition techniques of a pre-existing model until the students acquired the skills required to make a true representation of that reality. These kinds of strategies focused their efforts in the result instead of the process, but they did contribute to increase the graphic referential background of the students, by working with reference images and/or objects (figure 4). Assuming the need to count on graphic references as reliable triggers for the creative process, we utilize them through analogy and comparison of the production developed in the group, to promote a collaborative learning dynamic.



Figure 4. Tradition understanding of drawing vs present dynamics. ETSAM, UPM. 1993/2018.

The intention is that the group evolves, not as a set of individuals that compete with each other to obtain the best result in an individualized manner, but as a collaborative working group that allows the flourishing of different talents. The goal is to work together to improve the individual and personal creative path of each student, promoting the research and exploration both in the technical and conceptual field. This is a principle that we follow in the different stages of the process (8).

In the second cycle, we start working with de-contextualized physical models as initial triggers of the process. As the semester progresses, the students' personal work becomes the triggering element for the next step. During the third and conclusive cycle, the students are asked to transfer the creative process to a physical space and start ideating spaces, under the same parameters. Even though each semester corresponds to an independent subject, the work is developed in continuity along the year. The Spring semester fully introduces the concept of "architectural thinking", once the students have acquired certain drawing skills, based on the concept of drawing as a thinking tool: action drawing (figure 5).



Figure 5. Students' work, DAI 2, Core First Year Studio. ETSAM, UPM. 2017-2018.

Certainly, we understand the contemporary practice of design in architecture essentially as an interdisciplinary endeavor, where audio-visual media and digital technologies play a crucial role in the development of spatial experiences. During this semester, we take the opportunity to expose the students to different hybrid techniques that combine analog and digital tools along the design process. The work is developed in three successive approximations, corresponding to a progressive zooming from the urban scale to the human scale. Through the drawing, in its different forms, the students are prompted to analyze the territory and provide an answer to unspecific questions, not necessarily programmatic, as our intention is that they focus on the understanding of their environment

from a new creative perspective, in which they are required to make a proposition and communicate it as well.

During the first cycle, we will work on the formal dissociation of the image and the architectural project, from an analytic perspective. There is an inseparable relationship between the initial imaginary input and the ulterior level of abstraction of the complexity generated. The second cycle addresses the architectural design, from the perspective of a transformational continuous process. Finally, the third cycle will pose an architectural response to the previous analytical interventions (figure 6). The aim of this methodology is to encourage the students to follow a personal creative path, in which they necessarily have to make decisions on issues such as program, scale or location, through a graphic process.

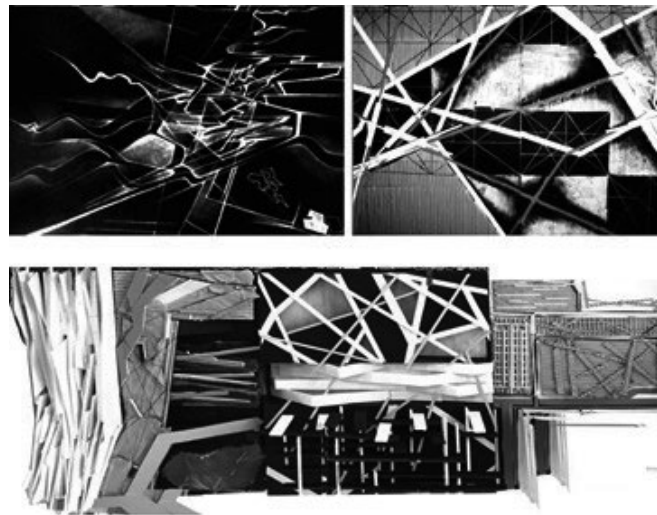


Figure 6. Students' work, DAI 2, Core First Year Studio. ETSAM, UPM. 2017-2018.

EXPERIENCE OF DRAWING IN A DIGITAL-BASED ACADEMIC PROGRAM

Throughout our teaching career, we have had the chance to verify that while digital processes are capable of generating results of a great complexity, they don't foster the development of a critical thinking or a full comprehension of the spatial qualities of the architectural proposal, specially when dealing with first-year students. In that sense, our pedagogical approach has deeply overcome the duality of representation versus expression, and analog versus digital.

Over the past years, our Teaching Unit has developed a methodology based on the drawing as a tool of expression, creation and criticism to support the development of an architectural design. We have evidences of the success of this program, as it has been deeply tested and improved through the years. Recently, we had the chance to accept the challenge to insert a similar program into a purely digital environment, at the School of Architecture of Woodbury University. The Studio

Unit we collaborated with, has a well-established syllabus, with slight variations introduced along the years. The goal of the Studio is to provide a technical and ethical foundation for engaging in the study of architecture. According to the syllabus, “students learn fundamental skills for generating, representing, and archiving three-dimensional form with precision and clarity using a wide-range of tools”. Students must build a series of digital models that are materialized in physical models, with specific conditions regarding scale, materials, and the geometrical operations permitted.

Our contribution consisted in the implementation of additional sessions related to the different programmatic phases, discussing issues such as space and matter, proportion, geometry, dynamism, use of color, etc. Each session included the commission of related readings, theoretical lectures and a graphic workshop. Students were encouraged to develop a collaborative work from a critical perspective on their own work and their peers (figure 7).



Figure 7. Triggering images: “Les Demoiselles d’Avignon”, P. Picasso, (1907); “Nude Descending a Staircase”, M. Duchamp (1912); “Windows Open Simultaneously”, R. Delaunay (1912); Students’ work, Studio One, Core First Year Studio. Woodbury University. 2017-2018.

This experience allowed us to verify some interesting data regarding the pedagogical strategies followed in this experience and along our careers. We could test the benefits of linking a design process to a dynamic physical activity, such as drawing. The feedback of the students was extremely positive as they felt especially engaged with our proposals, even though they were different from their usual assignments.

In addition, as we have already mentioned, architectural thinking is activated through the action of drawing: “thinking-drawing” as a two-ways process, that enabled the students to

try multiple approaches and variations, promoting the above-mentioned creative thinking (figure 8).

In our opinion, this experience provided the students with alternative strategies of conceptualization and expression of their ideas and thoughts, focusing on the development of the creative process, instead of the outcomes. The students included naturally these new strategies in their own processes developed at the Studio, going back and forward from analog to digital. We had the chance to prove the flexibility of this methodology and its enrichment in a different context.



Figure 8. Students’ work, Studio One, Core First Year Studio. Woodbury University. 2017-2018..

CONCLUSIONS

As above-mentioned, we have witnessed the dramatic changes that have taken place around architectural drawing, both in academic and professional environments, specially since the inclusion of digital media in architectural production. The architectural drawing represents our way to create, define, express and communicate ideas, but it also constitutes a fundamental tool for criticism and speculation. It comprises multiple techniques and strategies, including digital, analog or hybrid experiences (9).

Mastering analogue drawing techniques allows the students to gain a great graphic experimentation capacity. Its instrumental component is not comparable to any digital media. Besides, the materiality of the act of drawing enables a real and deep understanding of the space and the relationship with the human scale. The students’ consolidation of a personal graphic language, stimulates their imagination and the experimentation with other instrumental techniques, such as modeling, photography, collage, digital tools ...to maximize their propositional capacity.

Ultimately, drawing is expressing and communicating, without any restriction of code or support. We don't understand the irruption of the digital media as threat. On the contrary, it makes available a wide range of new tools to improve the fundamental purpose of drawing. It is a challenging reality that promotes the progress in the field of architecture. Drawing is no longer restricted to a narrow range of media or subject to a limited encoding systems or graphic languages.

In the action of drawing, as a communicative trigger of the creative process, the graphic media should not constitute a restriction but encourage the exchange of ideas among others. It implies the knowledge of a language but also acquiring other skills linked to a creative and productive discourse.

The discipline of architecture has dramatically changed in the last years, not only with regard to the emergence of these new technologies but also the role of the architect according to the new demands of our society. The traditional figure of the architect as an isolated "craftsman" clashes with the complexity of the new requirements. Architecture has become a collaborative discipline, that requires the dominance of multiple skills and abilities. This way of working requires an early learning, educating in respect and the adaptation to the different ways of thinking (10).

In our opinion, the contemporary practice of design in architecture is, undoubtedly, a multidisciplinary task, in which audio-visual media and digital technologies play a preponderant role. The inclusion of drawing in a wider context, as we have presented, encourages the development of critical creative processes, with the combination of analog and digital tools, exponentially increasing our imaginary capacity.

ENDNOTES

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