ANALOG AND DIGITAL IN ARCHITECTURE

Since the mid-1960s, when the emergence of the first computer-aided design (CAD) packages occurred in the market, there was a stir in the representation media, where a confrontation arose with the traditional hand drawing that, until then, had been the ideal medium through which man expressed his thoughts, ideas and concepts associated with design. As a consequence, great discrepancies arose between the traditional representation processes and the new digital alternatives characteristic of the computer age.



fig. 1



In the world of architecture, Frank Gehry was one of the first to venture into these new processes, proposing the Lewis Residence in the mid-1980s. The series of designs for the unfinished Lewis Residence project shows a fascinating interplay between the possibilities offered at that time by computerized three-dimensional simulations and physical models, discovering a new architectural language. (fig. 1) (fig. 2) For Gehry the computer was not only a tool used to document and deliver the project, but also a partner in the development of an expressive formal and spatial design language.

fig. 2

More specifically in the field of education, the emergence of digital drawing and its great popularity made a large sector fear for the disappearance or displacement of analog drawing. The implementation of computer-aided design programs in architecture teaching systems has grown to date, becoming part of its foundation.

During all this maelstrom urged by the progress and modernization of the trade, analog drawing survives in schools and studios but not without first posing a dilemma regarding the place it should occupy compared to digital drawing. Why learn drawing by hand when the computer does it all? What weight should analog drawing and digital drawing have in teaching? Is one more important than the other?

The reality is that both analog and digital drawing in teaching show a greater presence depending on in which field it is used. We found subjects focused only on digital drawing and others only on analog, but they are rarely taught in a hybrid way.

As always happens in the teaching of an architecture student, all learning ends up being used in the subject of projects, where the student uses all his resources to be able to develop it. In the same way that the student uses his knowledge about structures, he does it with digital and analog drawing. Unconsciously, there is a hybrid collaboration of the process, where the student unconsciously creates a migration between one presentation system and another. It is the student who dissipates any confrontation between systems, perhaps anticipating the education of architecture itself. The student makes latent that way of working that, regardless of the individual approach of each one, is not yet regulated in teaching. Thus, the use of both systems becomes something new and subjective, something personal and unique corresponding to the way of working of each student. The visualization and ideation of the abstract, where the sketches (analogs), the abstract models and the models, capture the initial intentions and allow the development of the subsequent formalization of new ideas, is usually shown in the analogous field. On the other hand, the formalization of the idea and its standardization relies mainly on the digital realm of drawing and modelling. However, even though the computer is a tool that incorporates other old ones, it does not rule them out since analog and digital designs are complementary, each one suitable for carrying out a different task. And it is that as Alexander Junior's Galvez Nieto collects well in his text The method of analog-digital project to improve learning of threedimensional architectural rendering, one might think that, with computers and three-dimensional representation programs, models and sketches have lost their functionality. However, the presence of experiences shows us that they facilitate the learning of the concepts of architectural representation and education.

The divergences between analog and digital drawing suggest the existence of a gap that urgently needs to be studied and meditated, since it is not feasible to adopt a radical selection stance in front of the two types of representations, due to the fact that hand drawing, is and will continue to be the means par excellence to communicate ideas and allow hand-brain interaction; On the other hand, the new media cannot be demonized or disappear, because they are the product of the constant change and develop ment that society experiences daily, and they are implicit in the era in which we are involved.

As of 2007, some Latin American universities such as the Universidad del Bio-Bio (Chile) and the Universidad Nacional del Litoral (Argentina); and in Europe, such as the University of Manchester (United Kingdom), have proposed new strategies and methodologies of teaching and learning of architectural representation. They use not only digital media that have greatly advanced and revolutionized architecture; but they also consider the introduction and experimentation with analog media (carried out by hand), creating a hybrid architecture. Facing new challenges and new methodologies notably help the plasticity of the brain, making the neural connections stronger and stronger. Thus, analog drawing and digital drawing are taught in a hybrid way allowing the possibilities that this combination offers to be explored.



fig. 3



At the Ricardo Palma University of Peru, a study is being carried out where it is intended to design the analog-digital method that integrates the conceptual model and the virtual model for the learning of students of the 5th semester of the architecture career. (fig. 3) (fig. 4) The objective is to develop a conceptual scale model inscribed in a prism while using the Revit Architectural program in order to contribute to the development of the initial idea. It is thus intended that the student interact with the conceptual model and the software as best suits him, creating a non-arbitrary creative synergy, where the students propose their own morphological relationships. (fig. 5) Throughout the process, all data is monitored through observation, surveys, and rubric. Finally, all students agree that: the combined use of the model and the virtual model is an innovation in architectural representation, the model helps to improve the virtual model and to develop the initial idea. The representation of their ideas has evolved and improved during the design process.

It is a reality that hybridization in design, intentional or not or part of teaching or not, is an advantage when designing that is continuously in development. The way in which the brain sends orders to the hand, that it slides on the paper or moves the mouse of the computer causes a feedback of the creative process.

The appearance of new electronic devices for design such as the graphic tablet is just one more proof of how the evolution of the hybrid system influences the sector. A touch pen and a screen for drawing. An electronic device in which you can draw with your hand as if it were an analog drawing, but without being analog as such. Thus, the graphic tablet is the product of this need to work in a hybrid way, of that need to support something as hybrid as design that emerged in the same way as computer-aided drawing programs.

It is therefore necessary to continue configuring and developing the new hybrid representations of drawing, with the aim of opening new alternatives and enabling new fields of study.

Hybridization as a method supposes a look to the present and the future and a standardization of a process that the human brain performs regularly.



fig. 5

REFERENCES

- Eduardo Carazo Lefort. (2011). Scale model or digital design model. The survival of a system. EGA Magazine of Architectural Graphic Expression. https://www.researchgate.net/publication/310833774_MAQUETA_O_MODELO_DIGITAL_LA_PERVIVENCIA_DE_UN_SISTEMA
- Alexander Junior's Galvez Nieto. (2014). The method of analog-digital project to improve learning of three-dimensional architectural rendering. XVIII Congress of the Ibero-American Society of Digital Graphics. http://papers.cumincad.org/data/works/att/sigradi2014_043.content.pdf
- JUAN GUTIÉRREZ, Pablo Jeremías. "The time of the model (virtual and real) of representation of architecture" EGE. Journal of Graphic Expression in Building. N. 7 (2012). ISSN 1888-8143, pp. 18-23 http://rua.ua.es/dspace/handle/10045/25557

FIGURES

- Fig. 1. https://www.cca.qc.ca/en/events/3333/archaeology-of-the-digital
- Fig. 2. https://www.world-architects.com/en/architecture-news/found/a-gehry-inside-a-vinoly
- Fig. 3. Provided by Alexander Junior's Galvez Nieto
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- Fig. 5. Provided by Alexander Junior's Galvez Nieto