ARCHITECTURAL VISIONS AND MEDIATIONS OF CYBERSPACE

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Abstract
The use and evolution of Information and Communication Technologies is widening not only the process of communicating architecture but also it is challenging what we design and also how we design. These technologies became infrastructures in a world that has acquired a digital or virtual layer that are affecting not only the professional practices of designers, but also, and more generally, our collective vision of spatiality and the way we communicate it. In order to adjust itself to this increasingly volatile world, architecture is recasting its boundaries, its essential codes and tools. This paper focuses on the application of these ideas into the theoretical and methodological structure of an undergraduate course held in the context of an international Virtual Design Studio between a French and a Canada school of architecture which general objective is to explore the associations between Forme, Information, Novation and Conception by designing Virtual Architectures (FINC-AV).

1. Introduction
The entire roller coaster of twentieth century history was drove by the transformative power of Information and Communication Technologies. But it is important to emphasize that this transformative power regards not only the complexity or the mass availability of these technologies. It is mainly related to a cultural paradigm shift based on the way we structure and conceive our world. This so-called digital era has brought new concepts, new behaviors and new patterns in general that are changing human's cultural, social, and material context. So, being designers and/or consumers of technologies, we are constantly invited to adapt or to develop new visions and tools to communicate this new context. Architecture, here understood as cultural practice, as interface between human being and its environment, is the art of mediation par excellence. Consequently, its theory, practice and teaching are in the core of this paradigm shift that among other cultural implications, is changing the idea of architecture itself, opening to architects new conceptual and experimental environments that can be professionally and didactic explored. This paper focuses in one of these new environments: the cyberspace and its architectural visions and mediations. More specifically, this paper reports on an undergraduate teaching experience called FINC-AV held in the context of an international Virtual Design Studio between a French and a Canada school of architecture. Dealing with new designers’ attitudes exploring cyberspace, this course aims to explore the associations between Forme, Information, Novation and Conception by designing Virtual Architectures. We begin describing the theoretical framework and the context within FINC-AV has been developed. After we present the concept of Virtual Architecture and the FINC-AV experiment (objectives, structure, contents and an example of student work). Furthermore, we discuss ours results and make an outline of the mainly ideas carried out by the authors.

2. Theoretical framework
Over the last thirty years, we have witnessed a progressive infiltration of digital technologies in the realm of architecture (its theory, teaching and practice).
This process, in constant evolution, has opened a vast range of research interests and approaches and even if we can already identify some new organizational models (modes of production, work and knowledge) and some new communication processes (associated to the use of electronic networks as Internet), their architectural implications are not so evident.

We could summarize into three the major changes in research direction concerning the use of digital technologies in architecture. In the first, the statute of computers shifts from a simple descriptive tool (mainly focused on the development of computer-aided-design) to a conceptual tool (using computer tools in non-graphical aspects of design). In the second stage, the totality of the architectural process is concerned (design, communication, construction). In the third stage, with the advent of Internet another research focus appears, dealing with the collaborative and social aspects of architectural activity as well as the possibilities of a reciprocal contamination between the physical and virtual configurations of architectural artifacts.

Embedded in this third research direction, FINC-AV course undertakes the task to approach a subject matter that deals with the double problematic (cultural and pragmatic) that is progressive infiltrating architecture: the hybridization between a culture of objects and stabilities and a culture of flows and instabilities. This logic of hybridization is gradually setting a “new art of the reason” in our day-life experience and conception of reality (Quéau 2000). Philippe Quéau uses this expression to underline the emergence of a new manner of exerting our rapport with the reality based on new associations between the techné (art) and the logos (thought). But author asserts that this “new art of reason” goes beyond the use of new technologies. It implies, above all, another vision, another mental attitude in relation to our perceived world.

3. Hybrid cultural context

Concerning to architecture, this “new art of raison” is widening not only our perception of space but also it is interposing itself into the architectural vocabulary, grammar and its different ways of expression. If it can actually be question of a physical, virtual and hybrid architecture (Engeli 2001; Kerckove 2001), it is undoubtedly necessary to question the renewal of our perceptive and cognitive skills during the architectural design process. In this context, concepts such as representation, virtuality, tectonics, form, image and imaginary come to telescope in the universe of IC technologies to create a “second social skin” (Mons 2002) that envelops the contemporary architectural mediations (procedural, symbolic and material).

Placed in this hybrid cultural context, FINC-AV was developed from a international cooperation established in 2003 (Côté and Légilise 2005), between two research groups: the Laboratoire d’Informatique Apilquée à l’Architecture (Li2a) of School of Architecture of Toulouse (France), and the Atelier de Design Informatisé of School of Architecture of Laval University (Quebec, Canada). The organization and teaching experience was ensured by teacher-researchers from different disciplines (architecture, visual arts, human-computer interfaces (HCIs), sociology and philosophy).

In this edition of FINC-AV, held during winter section 2004 (in earlier paper we have reported on the anterior version - Marques et al. 2003) we have focused on two main aspects: First, the collaborative workspace in which students, working in pairs (French/Quebecois), at the same time (synchronic collaborative work), and using virtual networking technologies, carried out the design of a Virtual Architecture. Second, the spatial qualities of the Virtual Architecture proposed by each pair of students.

4. But what’s about Virtual Architecture?

Virtual Architecture (VA) is a generic expression that covers various neologisms (digital architecture, transarchitecture, liquid architecture, cyberarchitecture, etc.). In a general way, the design of Virtual Architecture can be associated to two different objectives: 1. The simulation of the physical architecture (in this case the computer-mediated generation of architectural experience deals only with the visualization of the physical characteristics of the architectural object); 2.
To provide a sense of place, of being here, a sense of awareness of others in the same place (in this case the design of virtual architecture needs to go beyond the visualization of forms and also includes the design of the possible interactions and the potential intelligence embedded in this kind of functional virtual place). (Gu and Maher 2001).

Without claiming to freeze the field of VA within a single framework, it seems coherent and necessary to associate it to the technical, symbolic and psychological issues concerning the use of IC technologies. In our point of view, designing VA's involve both architectural design and computing disciplines. We need to specify 1. The spatial elements (vocabulary) and their grammar (space-establishing elements); 2. The modalities and levels of interactions; 3. the aesthetics and ethical characteristics (Marques and Goulette 2000).

Virtual Architecture can be understood as the association between architectural metaphors (used as tool for the spatial structuring and representation of virtual places) and informational entities (which allows the necessary flexibility and fluidity of virtual places). It is an architecture that is based on particular modes of design and aesthetics (aesthetics of communication, of ephemeral). It is an architecture that evokes the destabilization of form and adopts a kind of language that gives to the digital information the status of model, of ideal.

5. FINC-AV experience

The main objectives of FINC-AV course are: 1. To re-interrogate the devices and the finalities of the operations of design; 2. To allow students to explore the new territories and mediations of cyberspace by designing Virtual Architectures (students were invited to investigate new designers’ attitudes and to explore cyberspace as a new design environment); 3. To test a hybrid, multicultural Design Studio context.

5.1. Structure

Concerning its pedagogical structure, FINC-AV is a half-year elective course held for undergraduate students of architecture. They should work in a binomial mode but physically distant (one at Toulouse’s school of architecture and another at school of architecture of Laval University) through synchronous and asynchronous remote collaborative design. The total number of students attending the course is about 20 (10 binomials) each one having a computer connected to the Internet. In order to make possible the communication and the collaborative purposes between students, between teachers and between students and teachers, this co-teaching experience was based on the massive use of IC technologies, using available open-source to support 3D real-time communication for both Mac and PC platforms.

The dialogue between students (mainly concerning the negotiations of designing tasks), was essentially made by “Chat room” and electronic mails. The use of VNC system (virtual network computing) made possible the synchronization of the design experience. After the first virtual encounters, each pair of students achieved to establish a protocol for using the “collaborative mouse” (during design sections, they alternate which computer will be used as a host one).

5.1. Contents

FINC-AV contents were structured into three phases: 1. Phase of lectures called “Freedoms and constraints of virtual space”; 2. Phase of the Virtual Architecture collaborative design; 3. Phase of writing the final report of the course.

During the first phase, contents are centred on concepts and technologies related to the design and visualisation of virtual spaces. It is an introductory phase to the design of Virtual Architecture (VA) as well as to the collaborative design. Theoretical presentations are accompanied by the screening of some case studies of contemporary experimental architectures. At the end of this first phase, students are asked to produce a SIP (Project’s Information System) a kind of digital catalogue in which students organize the research material (texts, images, bibliography) concerning the categories and design principles of VA they could identify. The SIP is a useful
tool to the next phase.

During the second phase, each pair of students was asked to design a Virtual Architecture that should be multifunctional and multi-user virtual environment. We have suggested a general theme (virtual atelier) and the basic elements of the architectural program (a hall, a common place to enter in the virtual atelier; private and public places related to the concept of virtual atelier; zones of common services; zones of transition/tampon that could facilitate the navigation). At the end of this phase, students present their projects (by pairs and remotely connected using 3D real-time communication) to a jury of teachers of Toulouse and Quebec (also remotely connected). More information can be found at: http://www.toulouse.archi.fr/ensweb/pic/finc_av and http://www.limable1.arc.ulaval.ca/atelier_virtuel/.

5.2. Un example

In order to illustrate the design of the VA proposed, we will use as example the virtual atelier developed by Vincent Baillon (Quebec) and Marion Dumazer (Toulouse). The concept used by these students was “ergonomic mental” (each pair of students can choose the conceptual basis to develop the general theme of virtual atelier). The VA proposed is based on the conception of a virtual workspace in which different groups of professionals (architects, poets, musicians, engineers etc.) can work on different projects (each group of professional having its own “creative cell” that they can organize according theirs needs). The design of this Virtual Architecture is metaphorical-based: students use the metaphor of the molecular scheme. The next four figures show the evolution of the design of this virtual atelier.

6. Discussion and outline

Even if it is impossible to highlight all that was experienced during FINC-AV, we can summarize some few points that encourage us to pursue and develop this direction of teaching and subject matter: to explore the architectural visions and mediations of cyberspace. Developed in a hybrid, multi-cultural and collaborative workspace context, this teaching experience provided the means to develop an operational framework in which we could discuss, analyse and design Virtual Architectures. In despite of the diversity of material and human resources, this context contributed as a source of enrichment and motivation: 1. Teachers belonging to different disciplines (architecture, visual arts, human-computer interfaces,
sociology and philosophy) and coming from different countries (France, Canada, Brazil); 2. Students working in pairs and remotely connected (Toulouse/Quebec), dealing with a complex subject (properties, design and applications of Virtual Architectures), with different platforms (Mac and PC), with technical problems during the real-time presentations of their projects (we didn’t dispose of a real-time audio-video communication system and also we had to face problems on the fluidity of the interactive walkthrough of VRML models).

We have claimed in this paper that many of the concepts and notions of architecture that we usually take for granted, are being reinvented and expressed in new ways. The statute of the architectural object and architectural form became ambiguous. Today, architecture must consider the place of Information and Communication Technologies not only in the chain of the architectural production, but specially in the core of the new cognitive devices related to the capacity of conceiving and analysing space.

Even if the design of Virtual Architecture can’t be dissociated from the nature of cyberspace, we also have attempted to extrapolate the technological niche in which it is actually placed. Setting the pixel as alphabet, the sign as vocabulary, the algorithm as grammar and the interactivity as mode of reading, cyberspace does not have semantic or structural limits. So, in the new territories of the cyberspace, the design of Virtual Architectures is rather associated to the concept of cognition and communication environments. As we further explore the design of Virtual Architectures, architects will be able to better understand the progressive structural and semantic mutations of our cultural environment.

During FINC-AV lectures we have worked on question as: Is the cyberspace becoming a new referential space to architects? Is the reciprocal contamination embedded in the logic of a cultural hybridization (between a culture of objects and stabilities and a culture of flows and instabilities) inducing new practices of space? Is it inducing a new kind of architecture? Searching for answers, students built a theoretical framework and a new architectural rhetoric to work on. Using a metaphoric-design approach to develop the collaborative design of Virtual Architectures, they expanded their space of action and imaginary.

Last but not least: “the building may be static, but the architecture is never at rest”. (Spuybroek 2000).

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