Exploring Collective Architectural Conception: Cooperation, Coordination and Collaboration via Basic Online Tools

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Abstract. Online technologies are already fully integrated into almost every domain of activity. We want to better understand if and how these tools assist groups of people in their architectural conception process. By looking at cooperation, collaboration and coordination moments from the architecturological point of view we hope to associate cognitive operations of conception to the use of certain online tools. The purpose of this research is to build a theoretical model of the collective architectural conception process in relation to the use of basic online tools.

Keywords: collective architectural conception, basic online tools, architecturology, cooperation, coordination, collaboration.

1 Introduction

Internet is opening a world of possibilities for diverse collective constructions. In architecture, its uses modify the manufacturing process thereof introducing new relationships between designers, workspace and tools. Therefore these uses in architecture lead us to ask three questions in order to better understand contemporary mechanisms of architectural design process conducted through Internet: how do online technologies assist people within the process of architectural design? How does the use of online technologies shape the design process itself? What is the impact of online technologies on the final architectural project?

This paper presents the ways in which we address these issues from a specific scientific French field called Architecturology [1]. The first part presents the scientific anchor of our research, the second one approaches collective architectural conception and the third, online tools in collective architectural conception. The last part presents some first results and a preliminary conclusion of this first stage of the research.

2 Architectural Conception

For this research, we distinguish two stages of architectural production: conception and manufacturing. Architectural conception consists for us in a series of cognitive operations that transform the project model in order to obtain a final state that is then

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manufactured. This point of view is based on Simon's definition of conception that considers it as a general process in which someone imagines a series of dispositions in order to change an existing situation into a desired one [2].

Architectural conception is for us a specific process dealing with space, a projection in future concrete space. According to architecturology, the architectural conception process can be modeled as a number of evolving operating relationships between spatial models and what are called scales, i.e. classes of cognitive operations by which shapes and measurements are given to the future space [3].

If this scientific model makes the architectural conception process intelligible, it does not include the participants of the process nor the collective work that grows more and more with the use of online technologies. Who are the conceivers and how they work together within architectural conception process? This is the question we would like to approach.

3 Collective Architectural Conception

To understand this question, we must explain our approach on collective architectural conception. Collective conception is for us an activity undertaken by a group of people who works on the same artifact and who has a common goal. Within this framework, we can distinguish between two main types of activity categories: collaboration (synchronous collective activities which include operations of actual conception as well as co-conception) and cooperation (mostly asynchronous collective or individual activities which include operations of distributed conception and of coordination) [4].

Allwood, Traum and Jokinen define cooperation as the sum of coordination and collaboration moments, which enable the actors to share a common goal [5]. Panitz meanwhile, defines the conception process as a strategy of interaction between actors, composed of collaboration and cooperation [6]. Cooperation, coordination and collaboration are then three keys to question collective architectural conception.

From the Architecturological viewpoint, our research consists in questioning how cooperation, coordination and collaboration are implied in the architectural conception process conducted with online technologies. In other words, it comes to understand how these three spheres of collective work participate within the conception process in the following modeling.

$$\ldots > M1 \; -^{1} \; E1 > M2 \; -^{2} \; E2 > M3 \; -^{3} \; E3 > \ldots \; > ME$$

Fig. 1. Modeling of the architectural conception process [7]

This schema (Fig. 1) represents the architectural conception as a succession of models (M1, M2, etc) which are transformed by a series of cognitive operations of conception, called scales (E1, E2, etc.). What we understand here by models are the different references and the graphical or textual productions that showcase the project. Our question consists in understanding the symbols -1, -2, -3 in order to know how the cognitive operations of conception are associated to the process : by cooperation, coordination or collaboration and in relation to online tools.

To identify the activities and the online tools at work in architectural collective conception we have first explored diverse online tools which are able to support it. This first exploration has been made to understand how online tools assist collective architectural conception.

4 Use of Online Tools in Collective Architectural Conception

We have chosen to focus on what we call "basic online tools", such as e-mail, chat, file transfer systems, blogs and Wikipedia platforms. These tools are for the most part fully developed services that have widespread use over different populations of Internet users, in different domains, for all types of activities. This means that the tools are used within all age groups, by all genders, in all different group sizes and at various use intensities. Basic online tools are non-specific to the architecture domain but are the subject of appropriation and adaptation to better assist the collective conception process.

For this exploration we can distinguish between different uses of online tools: the basic use (mainly for which the tool was designed) and the use within the collective architectural conception process.

The basic use of online tools can be a key factor in the realization of a project. For example, Telecomix (a community of online hackers) has used Internet Relay Chat (IRC) in order to collaborate online and build an Internet connection for the Egyptian and Syrian protesters during the Arab Spring. Another example would be the Transition Network (a community of local ecological movements) where members use Blog and Wikipedia platforms in order to post solutions to different architectural, technical or ecological problems.

As it has been shown by Earl, Kimport, Prieto, Rush and Reynoso in a study on online activism, the use of web technologies has the potential to fundamentally change the collective organization process [8].

The use of basic online tools within collective architecture requires an adaptation of these tools to the conception process. For example, Arquitecturas Colectivas is a network of architecture and design groups that created an online platform containing file transfer systems, chat rooms and discussion groups in order to coordinate and cooperate on the network's common projects: festivals, collaborations on different urban projects, etc.

5 First Results and Preliminary Conclusion

The first stage of the research presented here, allows us to associate basic online tools to the moments of architectural conception. For example, the main strategy for the Dreamhamar project was to engage two communities, local and international, in the conception process for the main square of the city of Hamar, Norway [9]. Therefore, the architects from Ecosistema Urbano developed two devices: a physical lab, for onsite conception workshops with the local community, and a digital lab, for online conception workshops with the international community. By using a combination of blogging features, website features and live streaming, Ecosistema Urbano developed

a debate platform, a database of ideas and a coordination tool for all the participants of the conception process (inhabitants, institutions, academia, designers). All the gathered information was synthesized into the Future Hamar Book which later became the base for the architecture project. Thus, we could assume that the basic online tools have been used to create the conception space for the participants in the architecture project.

While we have seen at first that basic online tools have the capacity to support collaborative conception (by video conference for example), from our research we have seen that in architecture they tend to be used more for cooperation and coordination moments. What is more, conceivers also build collaborative conception spaces through cooperation and coordination via online tools or in real space. Thus, further investigation will question the relationship between collaboration, cooperation and coordination in order to better understand the orchestration of these rare collaborative moments within the general conception process [10].

At the same time, we have observed that basic online tools can be used differently within the conception process. They can be used individually (the one tool for all online activities) or in combination (multiple tools that make a platform). They can also be used as such (without any modification) or can be altered in order to better assist the process. The tools can be used long-term or can be implemented only within a particular situation.

Our first findings listed enlighten the uses of online tools in collective architectural conception but do not answer all the questions raised above. We have to observe practices of collective architectural conception conducted with the tools evoked above in order to situate coordination, cooperation and collaboration in the process. We also have to interview the actors of collective architectural conception in order to enlighten their profiles (architects, engineers, managers, politicians, citizens, inhabitants, etc.) and to know what kind of architectural conceivers they are.

All observations and interviews will be analyzed with methods of Applied Architecturology [7] in order to explain:

- the cognitive operations of architectural conception implied in coordination, cooperation and collaboration;
- the cognitive operations of architectural conception implemented by each profile of conceiver;
- the cognitive operations of architectural conception supported by each online tools.

The aim of this study is to develop a theoretical model of collective architectural conception in terms of cognitive operations in relation to the use of basic online tools. The model could serve the general understanding of how online tools assist the conception process in architecture as well as in other similar domains such as design, urban planning or project management. This theoretical model could be later developed into a teaching instrument, a meta-tool for use of online platforms or as a resource for online tools development.

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