Editorial

The present issue of IJAC presents two main themes, raised during last SIGraDi Conference in Mexico City, October 2007. They reflected the most relevant debates in that event. The papers selected here originated from presentations to that event, developed by their authors with significant new contributions to their themes. Some of them focused on local cultures and urban realities highlighted by digital tools, while others are developments of design strategies. They share innovative ways towards linking traditional society with new media in different countries and social environments.

The first papers are grouped under the theme of collaborative work through web and virtual environments. Digital media has been changing in many ways our relationship to the built environment and society. The articles included in this first group are research efforts to gather and disseminate design knowledge. They raise technical issues about managing diverse kinds of information, as well as social and creative use of the distributed material. The tension among these two subjects is expressed in the four articles presented by different groups of researchers.

A network of Argentinean faculties, represented by their coordinators, Rodriguez, Castañe and Stipech, writes about a cross experience developing fragment of urban models. They use a diversity of technologies (3D CAD, GIS, VRML) to reconstruct historical places, landmark buildings, and significant public spaces in different periods, in order to understand the urban evolution of their local cities. They face several challenges in the work; data collecting, geographical location, geometrical accuracy, realistic visualization, and internet dissemination. They compare their efforts with relevant precedents in the field, demonstrating some advantages in the use of diverse resources to distribute the development and diffusion of the urban situation. They argue that their proposal may facilitate analysis, which complements the knowledge of the city and facilitates spatial comprehension

Kobayashi and Abdelhameed present another system for sharing design solutions through the Internet, which they describe as a "visual design forum". Their system includes an online collaborative environment for developing designs in two and three dimensions, and allows users to upload their solutions into a database. Other designers are able to retrieve the stored information searching by category. The greatest contribution of the system is the fact that the categorization of design solutions is based on formal properties classification. This classification method is based on a complex theoretical framework, which includes finite automaton theory, adjacency and topology, and not simply keywords entered by the contributors.

Silva and Paraizo describe an innovative work devoted to implement a design database based on Christopher Alexander's patterns. This well-know conceptual system proposed by Alexander in the 60s has inspired several architectural and computing projects and methodologies. Silva and Paraizo's main contribution to those explorations in Alexander's patterns is a system that organizes diverse and disperse efforts developed by local authorities, architects and planners to improve living conditions in non formal residential settlements in Rio de Janeiro. The self constructed squatter developments, called in this city "favelas", are an extensive reality in Latin America and other continents. These efforts, argue the authors, could be improved with a retrieval system of design solutions based on patterns. The Brazilian authors elucidate the theoretical framework and implementation of their computer system devoted to the "favelas" urbanization.

Another team of Brazilian researchers, Baltazar et al., explores a similar issue. They face the problem of intellectual property of design information in digital networks to improve low-income housing. They present a web-system to distribute and collect architectural elements and solutions for different housing conditions, including the possibility to add and manipulate content from non-professionals users. Thus, they properly analyze copyright alternatives to disseminate information through websites. Their contribution provides a valuable insight in a theme which usually involves collaboration but is still undervalued in digital research.

The second group of papers explores methods and theories for the digitally-mediated process of design. They include examples of generative techniques and philosophical discussions about the use of computers in design. These papers present experiments that run from the more concrete and specific and evolve towards more abstract and general concepts. They reflect two different standpoints in relation to the use of digital media in the design process. The editors' selection of this wide range of opinions reflects our belief that both standpoints are important, and should actually complement each other.

Tomás Dorta reflects about the use of digital media along the entire design process through experiments with students. Based on Goel's assertion that there are three different representation stages in the design process, Dorta argues that, despite using digital media for the second (presentation to clients and colleagues) and the third (communication with the construction team), designers still use a traditional representation technique – the hand sketch – in the initial stages, in order to communicate with themselves. To fill this gap, this author proposes an immersive environment for developing designs digitally, from the very beginning of the creative process. This environment, called "Hybrid Ideation Space", uses anamorphic spherical panoramic perspective as a representation technique. Data input is done on a digital tablet, with the use of a digital pen. Dorta's system also includes an image capture system for 3D-scanning hand-made

physical models, which can then be re-worked in the digital space, and then 3D printed. This part of the system is called "Hybrid Modeling". In summary, Dorta's system is based on traditional representation methods, but takes advantage of additional state-of-the-art technological resources to augment them. The assessment of the system is done by "Design Flow", a concept developed by the author. Unlike most assessment methods used to evaluate computer interfaces, Design Flow evaluates design tools in terms of the "flow of creativity and inspiration during the design process".

Butelmann describes the design and fabrication of a complex surface. The design of the surface, the graphic software used to model it, and the equipment used to fabricate it are very similar to those presented in many papers recently published in CAD journals. However, this author's contribution and originality stands in the fact that he proposes the use of a traditional construction method as a solution for certain difficulties seldom discussed in the available literature. Butelmann describes a series of experiments in which he applies concepts from the Chiloean boat constructive tradition to build architectural surfaces. Such concepts include the use of a "quilla" (keel) to strengthen the structure, and the use of a "structural skin", a double-layered wood skin made of thin, flexible boards disposed in opposite diagonal directions, which increases the resistance of the surface.

Kotsopoulos proposes the use of the shape grammar formalism for structuring an interpretation of design concepts from a computational viewpoint, with pedagogical purposes. He takes Steven Holl's Simons Hall design to develop a thorough case study about the use of multiple concepts related to porosity in a single building. Each concept is explained by means of a composition rule, in a "retrospective analysis" of the design process. The author suggests the use of his method for design education.

In addition to this issue's papers, we include a letter to the editors by Kostas Terzidis, which raises several issues for discussion. Those issues are particularly related to the latter group of papers. Similarly to Kotsopoulos, he also emphasizes the process rather than the product, with a reflection about authorship. Terzidis constructs his argument based on Searle's fable "Chinese room paradox" to demystify the idea of a genius architect. According to him, this myth fallacy is particularly clear nowadays, when he considers the programmer role in the design process.

This selection of papers expresses a diversity of areas related to digital design, which characterizes SIGraDi events. They diffuse the efforts of different researchers around the world expanding the possibilities of digital media and the effectiveness of professional labor. We hope they encourage applications and continuous explorations of architectural computing.