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Gabriela Celani · David Moreno Sperling  
Juarez Moara Santos Franco (Eds.)

# Computer-Aided Architectural Design

The Next City - New Technologies  
and the Future of the Built Environment

16th International Conference, CAAD Futures 2015  
São Paulo, Brazil, July 8–10, 2015  
Selected Papers

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## Preface

Since 1985, the Computer-Aided Architectural Design Foundation has fostered high-level discussions on the search for excellence in the built environment through the use of new technologies with an exploratory and critical perspective. In 2015, the 16th CAAD Futures Conference was held, for the first time, in South America, in the lively megalopolis of Sao Paulo, Brazil. In order to establish a connection to local issues, the theme of the conference was “The next city.” The city of Sao Paulo was torn down and almost completely rebuilt twice, from the mid-1800s to the mid-1900s, evolving from a city built of rammed earth to a city built of bricks and then from a city built of bricks to a city built of concrete. In the 21st century, with the widespread use of digital technologies both in the design and production of buildings, cities are changing even faster, in terms of layout, materials, shapes, textures, production methods and, above all, in terms of the information that is now embedded in built systems.

Among the 200 abstracts received in the first phase, only 33 were selected for this book, after three tough evaluation stages. Each paper was reviewed by at least three different experts from an international committee of more than 80 highly experienced researchers. The authors come from 17 different countries. Among the papers, six come from Latin-American institutions, which have been usually under-represented in CAAD Futures; 34 other papers were selected for publication in the electronic proceedings and in Cumincad ([cumincad.scix.net](http://cumincad.scix.net)), where this book’s abstracts are also displayed.

The papers in this book have been organized under the following topics: (1) modeling, analyzing, and simulating the city, (2) sustainability and performance of the built environment, (3) automated and parametric design, (4) building information modeling (BIM), (5) fabrication and materiality, and (6) shape studies. The first topic includes papers describing different uses of computation applied to the study of the urban environment. The second represents one of the most important current issues in the study and design of the built environment. The third topic, automated and parametric design, is an established field of research that is finally becoming more available to practitioners. Fabrication has been a hot topic in CAAD conferences, and is becoming ever more popular. This new way of designing and making buildings will soon start affecting the way cities look. Finally, shape studies are an established and respected field in design computing that is traditionally discussed in CAAD conferences.

The papers in this book cover three aspects of design computing: its origins, new research frontiers, and applications in practice. In a similar way, the conference keynote lectures were grouped into “CAAD in History,” with Arivaldo Leão de Amorim (Brazil) and João Magalhães Rocha (Portugal), “CAAD in Research,” with Axel Kilian (Germany/USA) and Jane Burry (UK/Australia), and “CAAD in Practice,” with Milos Djemic (Serbia/Germany) and Caroline Bos (The Netherlands).

The editors are very grateful to Professors Bauke de Vries and Tom Kvan, CAAD Futures’ presidents, for their constant support throughout the entire process of

evaluating papers for this book and preparing the conference. We also thank all the scientific committee members for their competent reviews and helpful comments to the authors, which resulted in the highest academic standard of the papers selected. Finally, the conference would not have been possible without the sponsorship of the following Brazilian public research foundations: the National Council for Scientific and Technological Development (CNPq), the Coordination for the Improvement of Higher Education Personnel (CAPES), and the Sao Paulo State Research Foundation (FAPESP, process number 2014/07186-5).

Hosting the CAAD Futures Conference was a great honor – we hope you enjoy reading this great selection of papers!

July 2015

Gabriela Celani  
David Moreno Sperling  
Juarez Moara Santos Franco

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