

Preface

The future is above all a question of design (Vilém Flusser).

The impact of digital technologies is perceptible on many levels, and since the process of implementation of such technologies is still in progress, it will also determine our future. Predicting the future has always been a dream of man. Nevertheless, it is still the case, perhaps fortunately, that the future remains unpredictable. Over recent years, however, computational tools and methods in architectural design and construction have developed rapidly and now allow for an approximation and simulation of the future in our profession. At the same time, complexity is increasing and the frontiers between the professions are becoming more and more permeable. This is both a big opportunity and a demanding challenge as new concepts and promising solutions can only be achieved by interdisciplinary work, where each field contributes its expertise, methods, and different points of view. Managing this process requires a holistic approach rather than focusing on individual aspects. In other words, we are looking for strategies of integration and a process-oriented perspective in architecture.

Information technology has brought about lasting changes in design and production processes in architecture. At the same time, our demands in respect of design and building processes have increased in line with technical possibilities. Aside from unprecedented geometrical freedom and new fabrication technologies, there is huge potential to optimize functions, energy usage, and performance of constructions, buildings, and services.

The programmatic title “Informed Architecture” connects the different topics and professions involved from a holistic perspective, ranging from Computer-Aided Design to Building Information Modelling, from Programming to Simulation, from Digital Representation to Augmented and Virtual Reality, and from Digital Fabrication to Physical Computation. In this book, experts from these fields contribute their academic and practical experience and their findings in research and advanced applications. The interdisciplinary contributions to this book cover the fields of architecture, engineering, design, and mathematics. In addition to these

scientific papers, documentation of academic projects illustrates architectural case studies that were carried out at the East Westphalia University of Applied Sciences and the Politecnico di Milano. Downloadable interactive digital graphics samples related to the mentioned projects will be included as supplementary information.

Against this background, the publication not only showcases the broad range and impact of information technology in architecture from an academic point of view, but also discusses different teaching methods and future developments in the field.

As such, this book will serve as an inspirational source for students and lecturers in architecture, design, and engineering as well as a state-of-the-art overview for researchers and professionals. Moreover, the volume will contribute to interdisciplinary discourse and aims to foster the critical discussion about the opportunities and risks for our profession in the digital era.

What are the conditions, constraints, and opportunities of this digital turn for the conception and making of Architecture? How do processes change and influence the result? What does it mean for the collaboration and roles of the partners involved? And last but not least: How does academia reflect and shape this development and what will come next? Following the sequence of architectural production—from design to fabrication and construction and the operation of buildings—the publication discusses the impact of computational methods and technologies and their consequences for the education of future architects and designers. Hence, this book aims at an in-depth understanding of the processes involved and reflects them in respect of our technical, historical, social, and cultural environment.

Prospective interested readers of the volume are all those academic and professional operators involved in the above-mentioned fields, including Bachelor's, Master's, and Ph.D. students, to whom this work could be proposed as a textbook, that is, as a theoretical as well as an operational reference.



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