

FROM MEGA TO NANO

THE COMPLEXITY OF A MULTISCALAR PROJECT

Edited by
Francesca Scalisi



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Edited by Francesca Scalisi

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INTRODUCTION

The present book collects essays, studies, research and projects on the subject entitled 'From Mega to Nano: the Complexity of a Multiscalar Project', inextricably linked to the ever-increasing request of trans and multidisciplinary of the project. The ability of 'change of scales', work on more different scales – multiscalarity – create new ones or change the meaning of the scales commonly accepted, it is common practice in the approach to the project and has always concerned architects, engineers, designers and artists for the multiple symbolic and real meanings of the size of a territory, a city, an architecture and an object. However, it can provide a range of opportunities even in different contexts such as economy, politics, culture, etc.

The concepts of scale and size are fundamental to link, in a systemic point of view, the detail with the big picture, the detail with the group, to interpret and represent, to discretize and recompose elements and parts that stand in a hierarchy or interconnection relation, to investigate the physical and social, to outline critical issues and potential, but especially to establish the importance of relational aspects between the group and its component as a way to understand their identity, their nature and organization, their regulation rules and the role played in different contexts, namely the fundamental elements to identify the form and structure of a territory, a city, an architecture and an object.

The concept of scale in Architecture regulates the size of the anthropic space, always keeping human dimension as reference. The choice of the scale inevitably becomes a conceptual selection of what the project actually wants to represent. When using multiscalar representation, we try to show the complexity of reality, by using as many regulation criteria and specific evaluations as we can, not only by describing its size and geometric aspects but most of all by significantly highlighting its qualitative aspects and those related to identity, culture and history. This means that there is not just one scale to represent a territory, a city, architecture, an object or a detail; however, in terms of a necessary multiscalarity, the project chooses the most fitting scale to develop practices, on a case-by-case basis. Therefore, logically the scale influences the project: thanks to the progress of technology in the field of design at all levels, it is probably the component of the project on which the designer works the most, simultaneously coordinating real and virtual relations; these relations do not end when the form is created, but continue over time and modify the management of the object's complexity.

The papers in this volume, dealing with many disciplines, should be read in this

sense. The essay written by Nicola Campanile entitled ‘The appropriate form – The analogy between the architectural and urban scale’ gives a reasoned point of view in the architectural field on the concept of multiscale and its operational implications in the architectural project, trying to carry out a resemantization operation while relating this concept to the subject of analogy, a conceptual operation supported by the analysis of Aldo Rossi’s architecture which, in relation to the subject, can be considered paradigmatic.

Another key to understanding the subject is given by Ermelinda Di Chiara that in ‘The City of Agrigento – The form and the space of the city: an interscalar approach’ sees in the interscalar approach to the project a dimension and an operational principle through which it is possible to know the territory and its relations with urban systems in order to understand its principles, nature, organization and the role it plays in different contexts. The concept of interscale is explained through the case study of Agrigento, analysed from an ‘oversized’ dimension (the temples) to the infinitely small (the houses).

Next, Bianca Andaloro presents a paper entitled ‘Multiscale of adaptive architecture – The efficiency of micro and the resilience of macro in contemporary design’. It investigates the relation between the efficiency of micro and the resilience of macro in contemporary design starting by questioning which type of architecture is willing to welcome a constant comparison between different scales, materials and practices. Through the study of three recent projects, emblematic for their spatial and systemic complexity (Hardingham’s Generator, Carlo Ratti Associati’s Currie Park, and Reset), the essay identifies resilient architecture as the type capable of elaborating innovative characters through adaptive processes. The paper suggests that, in managing the complexity presented by an adaptive approach working in the interrelation between elements of different scales, an important role can be played at the micro-scale by the technological components which, added into the building and working at the medium scale, can capture information from an external base and return a response to improve environmental conditions and human needs.

Also, the paper written by the editor of this volume deals with the compelling environmental issue and the concept of adaptiveness, since it investigates the relation between Adaptive Facade and Phase Change Materials (PCMs) as a new paradigm for a sustainable approach in the building industry. The researchers and designers currently focus on new types of envelopes characterized by dynamism, adaptiveness, smart control, responsiveness, integration-hybridization, biomimicry, etc., fostering new subsystems not intended anymore as elements opposing to a flow, but – on the contrary – as ‘filters’ (between different scales) that receive by controlling, or oppose in a ‘smart’ way to, the external weather stresses by intercepting and capturing them in different directions depending on the seasons and the exposures, therefore assimilating the frontier envelope to a ‘technological Janus’. In this research context, the paper focuses on the characteristics and potentialities of

Phase Change Materials (PCMs) that change to ‘answer’ to temperature variations, changing their state, from solid to liquid and vice versa, depending on the amount of heat they absorb. In particular, it highlights the characteristics, advantages, limits, and fields of application of PCMs, focusing specifically on current research and future scenarios, mostly in relation to the contribution given by nanotechnology to boost the property of these materials used in the building industry.

The paper entitled ‘Climate risk management in the big data era – A multiscale, multidisciplinary and integrated approach’ by Maria Fabrizia Clemente highlights that in Architecture the research is pushing towards the integration of quantitative variables to support decision making processes. The introduction of enabling technologies and the dissemination of big data have enriched the projects with new inputs, but their added value lies more in the ability to extract, analyse and interpret the requested information through a multiscale, multidisciplinary and integrated approach, rather than in the volume that characterizes these data. In the context of climate risk management to support resilience projects, plans and policies, the acquisition and processing of an increasing amount of information is required to understand the complexity both of the territories and of natural events; however, there is a gap between the complexity of the models and the abilities of the users. Among the different natural phenomena, the paper focuses on flooding, one of the most complex and dynamic phenomena.

Francesca Albani and Matteo Gambaro in the essay ‘Multiscalar approaches to re-appropriating the Visconti-Sforza Castle in Novara between conservation and reuse’ describe the case of the Castle of Novara. In this case study, even with some outstanding issues, the multiscale and cross-disciplinary approach of the process has led to its re-appropriation to the city and it has become emblematic for the definition of new strategies for Cultural Assets which represent an important cultural and economic resource. To preserve the marks of their transformations and ageing represent the will of the modern city to take back the many ‘stories’ that these places can tell, enjoying them and making them part of the urban dynamics of a community that has been waiting for too long an answer to these issues.

Roula El-Khoury Fayad and Silvia Mazzetto in ‘Nation-building macro-narratives from Lebanon and Kuwait – The journey of Sami Abdul Baki’ report about the Golden Age, between the 1950s and 1960s, in Lebanon, when talented Lebanese architects having studied architecture abroad came back and made numerous successful collaborations between local and foreign architects; and in Kuwait where it has represented an interesting experimental ground for testing new ideas, projects and building techniques, together with the contributions of Western architects. Although the story of the modern architectural development of these two countries has been mainly characterized by great narratives, other works made by professionals who are not members of the dominant culture have made an important contribution. This is the case of Sami Abdul Baki designer of eclectic architectures in significant

places both in Lebanon and Kuwait, author of parallel micro-narratives that can contribute to a better understanding of the complex context of the two countries.

Then, Paolo Carli, Roberto Giordano, Elena Montacchini and Silvia Tedesco present the research entitled ‘Experiential tourism – Research, experimentation and innovation’ carried out at Alta Scuola Politecnica in collaboration with the industry, whose objective is to simultaneously carry out research and teaching by experimenting and prototyping new solutions and answers to real tourism problems and its most recent evolution: ‘experiential tourism’. Highlighting the potential of a multiscalar approach used as a tool to handle complexity, through a specific experimentation the paper leads the way both to ensure the quality of higher education and research activities in universities, at the same time committing to achieve its application, and to promote the ability to enhance the intersecting between supply and demand for innovative knowledge and technologies.

Paolo Di Nardo and Alessandro Spennato in ‘Design(ing) – The multiscalar project’, through a series of emblematic case studies, refer that the research of a new way of understanding the contemporary creative and scientific project does not begin with – as it was in the past – the demolition of already defined and experimented works, but it aims to establish precisely on such research an ideation path capable of grafting contemporary elements onto an already structured knowledge. Therefore, it should not be chosen, for example, technology alone as a solution to renewal, but all those contemporary requests – including the sustainable aspect to respond to the climate crisis – that know how to update multiscalar and multidisciplinary knowledge.

The volume ends with a paper by Daniela Anna Calabi and Elisa Strada entitled ‘Design of the atmospheres and the narrative dimensions – Literary Writing and Visual Writing’ which reports a translation experimentation from text to images to prove that the atmospheres related to the narrated space can be a guide to the territories and can transform into visual experiential text, an ‘atmospheric text’. In the atmospheric texts it is possible to trace two connotations: one concerning the style that characterizes the image and which relates to the choices made by the author; the other concerning the recognition of stereotypes so that an image, associated with an oral text, can determine the attribution of a meaning increasing that of the source text. The final result is a design increasing the editorial text experience, but also the understanding and hence the identity of narrated spaces.

In conclusion, the essays and research published show that if measuring, using the scale as a tool, means understanding the things in the world by establishing some differences, therefore ‘off-size’ can be the basis for new theoretical assumptions in which both the infinitely large (mega) and the infinitely small (nano) contribute to defining crucial topics, such as environmental, social and economic sustainability, resilience, territory government, the idea of space, aesthetics, use, development of new products, services and materials, etc. Therefore, the multiscalar ap-

proach can be considered as an important design working tool that, in a systemic point of view, can foster the proposal of adequate strategies for action and planning of sustainable actions, developing new methods, working techniques and shared measurements, through well-considered hierarchies of priorities necessary to optimize the choices of the project and to determine the reliable cost/benefit balances (especially of environmental nature).

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