



**TEMA**  
Technologies  
Engineering  
Materials  
Architecture

Journal Director: R. Gulli

e-ISSN 2421-4574

DOI: 10.30682/tema0801

**Vol. 8, No. 1 (2022)**

Issue edited by Editor in Chief: R. Gulli

Cover illustration: Tokyo International Forum by Rafael Viñoly, interior view.  
© Riccardo Gulli, 2018

Editorial Assistants: C. Mazzoli, D. Prati





e-ISSN 2421-4574

ISBN online 979-12-5477-084-9

DOI: 10.30682/tema0801

**Vol. 8, No. 1 (2022)**

Year 2022 (Issues per year: 2)

**Editor in chief**

Riccardo Gulli, Università di Bologna

**Assistant Editors**

Annarita Ferrante – Università di Bologna

Enrico Quagliarini – Università Politecnica delle Marche

Giuseppe Margani – Università degli Studi di Catania

Fabio Fatiguso – Università Politecnica di Bari

Rossano Albatici – Università di Trento

**Special Editors**

Luca Guardigli – Università di Bologna

Emanuele Zamperini – Università degli Studi di Firenze

**Associated Editors**

Ihsan Engin Bal, Hanze University of Applied Sciences – Groningen

Antonio Becchi, Max Planck Institute – Berlin

Maurizio Brocato, Paris – Malaquais School of Architecture

Marco D'Orazio, Università Politecnica delle Marche

Enrico Dassori, Università di Genova

Vasco Peixoto de Freitas, Universidade do Porto – FEUP

Stefano Della Torre, Politecnico di Milano

Marina Fumo, Università di Napoli Federico II

José Luis Gonzalez, UPC – Barcellona

Francisco Javier Neila Gonzalez, UPM Madrid

Alberto Grimoldi, Politecnico di Milano

Antonella Guida, Università della Basilicata

Santiago Huerta, ETS – Madrid

Richard Hyde, University of Sydney

Tullia Iori, Università di Roma Tor Vergata

Raffaella Lione, Università di Messina

John Richard Littlewood, Cardiff School of Art & Design

Camilla Mileto, Universidad Politecnica de Valencia UPV – Valencia

Renato Morganti, Università dell'Aquila

Francesco Polverino, Università di Napoli Federico II

Antonello Sanna, Università di Cagliari

Matheos Santamouris, University of Athens

Enrico Sicignano, Università di Salerno

Claudio Varagnoli, Università di Pescara

**Editorial Assistants**

Cecilia Mazzoli, Università di Bologna

Davide Prati, Università di Bologna

**Journal director**

Riccardo Gulli, Università di Bologna

---

**Scientific Society Partner:**

Ar.Tec. Associazione Scientifica per la Promozione dei Rapporti tra Architettura e Tecniche per l'Edilizia

c/o DA - Dipartimento di Architettura, Università degli Studi di Bologna

Viale del Risorgimento, 2

40136 Bologna - Italy

Phone: +39 051 2093155

Email: [info@artecweb.org](mailto:info@artecweb.org) - [tema@artecweb.org](mailto:tema@artecweb.org)

**Media Partner:**

Edicom Edizioni

Via I Maggio 117

34074 Monfalcone (GO) - Italy

Phone: +39 0481 484488

**TEMA: Technologies Engineering Materials Architecture****Vol. 8, No. 1 (2022)**

e-ISSN 2421-4574

**Editorial****Design and Construction. Tradition and Innovation in the Architecture Practice***Enrico Sicignano*

DOI: 10.30682/tema0801o

5

**CONSTRUCTION HISTORY AND PRESERVATION****Conservation principles and structural performance of Modern heritage:  
the church of San Giovanni in Bosco in Bologna***Giorgia Predari, Angelo Massafra*

DOI: 10.30682/tema0801d

6

**A Modern “machine for living”. The Villa Girasole in Marcellise in Italy***Antonello Pagliuca, Donato Gallo, Pier Pasquale Trausi*

DOI: 10.30682/tema0801e

16

**Traditional Chinese architecture: the transmission of technical knowledge for the development  
of building heritage***Cecilia Mazzoli, Caterina Morganti, Cristiana Bartolomei*

DOI: 10.30682/tema0801g

24

**Digital Twinning processes for the built heritage construction site: opportunities and implementation  
scenarios***Marianna Rotilio, Davide Simeone*

DOI: 10.30682/tema0801i

38

**Design strategies for the recovery and enhancement of lighthouse: some case studies of the Ligurian Sea***Giovanni Santi, Serena Braccini*

DOI: 10.30682/tema0801l

52

**Carbonia 1937-41. The worksite of autarchic architecture***Antonello Sanna, Giuseppina Monni, Paolo Sanjust*

DOI: 10.30682/tema0801n

65

**CONSTRUCTION AND BUILDING PERFORMANCE****A survey form for the characterization of the historical built environment prone to multi-risks**

77

*Alessandro D'Amico, Martina Russo, Letizia Bernabei, Marco Angelosanti, Elena Cantatore, Gabriele Bernardini, Fabio Fatiguso, Graziano Salvalai, Giovanni Mochi, Enrico Quagliarini, Edoardo Currà*

DOI: 10.30682/tema0801b

**Demolish or rebuild? Life Cycle Cost Analysis and Maintenance Plan for the Pro-Get-One Case Study**

89

*Marco Alvisè Bragadin, Marco D'Alesio, Annarita Ferrante*

DOI: 10.30682/tema0801h

**Methodological approach and comparative analyses for smart envelopes assessment in three different temperate climates**

102

*Francesco Carlucci, Francesco Fiorito*

DOI: 10.30682/tema080m

**BUILDING AND DESIGN TECHNOLOGIES****Accessibility and valorisation of historical universities through digital inclusive solutions: the case study of the University of Pavia (Italy)**

116

*Valentina Giacometti, Alessandro Greco, Carola Ricci, Silvia Favalli, Andrea Campotaro*

DOI: 10.30682/tema0801a

**Immersive Virtual vs. Real Environment:****a validation field-study to assess occupants' work productivity and comfort**

128

*Elisa Di Giuseppe, Arianna Latini, Marco D'Orazio, Costanzo Di Perna*

DOI: 10.30682/tema0801c

**Cultural heritage sustainability restoration: a quantitative method for the reversibility assessment of interventions on historical timber floor**

138

*Giacomo Di Ruocco, Roberta Melella, Luis Palmero Iglesias, Claudia Sicignano*

DOI: 10.30682/tema0801f

# EDITORIAL

## DESIGN AND CONSTRUCTION. TRADITION AND INNOVATION IN THE ARCHITECTURE PRACTICE

Enrico Sicignano

*DICIV - Dipartimento di Ingegneria Civile, Università degli Studi di Salerno,  
Salerno (Italy)*

DOI: 10.30682/tema0801o



e-ISSN 2421-4574  
Vol. 8, No. 1 - (2022)

This contribution has been peer-reviewed.  
© Authors 2022. CC BY 4.0 License.

Design and construction are intimately linked to each other and have always been an inseparable couple. Only if the design is linked and finalized to the construction do manifest a full, well-defined, clear, and complete value. Designing is codified communication, sometimes only at a technical level, sometimes with the value of an implied quality that varies in many ways, ascending in a few cases to the masterpiece. Designing means giving a spatial and constructional solution to a predetermined requirement in a complex system of needs, constraints, and conditions. It is merely the instant just before the construction; the entire process, however, is continuous.

Design is knowledge intended to manage and control building systems and materials, representing the work's identity, what characterizes it, and what qualifies it. Nowadays, it is associated with the concept of Sustainability, intended as an unavoidable added value to the process in terms of participation, control, non-invasiveness, feedback availability, reversibility, and resilience. Contemporary designing also took on multiple demands to be translated into functions, structures, and spaces. Economic and market globalization and the continuously changing needs of the new "liquid society", as defined by Zygmunt Bauman, have also changed the way of conceiving, designing, building, and living architecture globally. This change has been mainly fostered by the internet, digitization (in its broadest meanings and versions up to the "digital twin" of everything, and eventually of the human being), social media, the frenetic and fast world of connections and communications, big data, new formal and aesthetic role-models. The aestheticization processes have extended to all fields and are increasingly intertwined with those of economy and con-

sumption. Mistakenly, the notion, meaning, and value of Art – including Architecture and Visual Arts – coincide with their communication, improperly confusing means with aims.

Whether once Sullivan asserted "Form follows function", today we could update the motto by saying "Form follows the market".

Contemporary Architecture, including the narcissistic and bizarre works of a few Archistars, sometimes assumed to be authentic "creative divinities", is the child of these times. It is technologically complex, new, different, captivating, and arouses in ourselves astonishment and wonder. It is able to make people dream, sometimes reaching such high levels of popularity and pleasure to cross that half-open but still open door of the collective unconscious. The building process has been enriched by constantly growing technological innovation, and the widespread presence of special materials, with better and more reliable features and performances. Designing, building, maintaining, managing, reusing, and redeveloping, become complex, multidisciplinary work, sharing a few principles. Some have been irremovable since the dawn of time, and some are subject to continuous, necessary and indispensable evolutions, innovations, and updates.

Suddenly, the imponderable came out, the new event, unforeseen and unpredictable; the outbreak of Covid-19, after which the world is not and will not be the same anymore. This event claimed a rethinking and redesigning of private and collective living spaces. At the same time, it involved a similar change in public, work, study, meeting and relationship spaces in general, reformulating standards, reviewing regulations, and redefining design criteria.