



ITRUVIO

International Journal of
Architectural Technology and Sustainability



CIRCULAR ARCHITECTURE

Interview to **BENEDETTA TAGLIABUE**

6 · 1 | JUNE 2021



ITRUVIO

International Journal of
Architectural Technology and Sustainability

CIRCULAR ARCHITECTURE

Interview to **BENEDETTA TAGLIABUE**

EDITORIAL TEAM

Editor in Chief

Luis Palmero Iglesias

Universitat Politècnica de València, Spain

Editorial Boarding Members

Graziella Bernardo

Università degli Studi della Basilicata, Italy

Pierluigi De Berardinis

Università degli Studi dell'Aquila, Italy

Fernando Cos-Gayón López

Universitat Politècnica de València, Spain

Joaquín Díaz

Technische Hochschule Mittelhessen, Germany

Maria Cristina Forlani

Università degli Studi "G. D'Annunzio" Chieti-Pescara, Italy

Francesco Frontini

*Scuola universitaria professionale della Svizzera Italiana,
Switzerland*

Juan Antonio García-Esparza

Universitat Jaume I, Spain

John Pendlebury

Newcastle University, United Kingdom

Gilles Perraudin

Architect, Lyon, France

Advisory Board Members

Avi Friedman

McGill University, Canada

Tsuneaki Fukui

Hosei University, Japan

Gerhard Kalhöfer

Gestaltung Hochschule Mainz, Germany

Olimpia Niglio

Kyoto University, Japan

Managing editor

Stefania De Gregorio

Università degli Studi dell'Aquila, Italy

Published by

Univesitat Politècnica de València

CONTACT

Luis Palmero Iglesias

Phone: +34 963879451

Fax: +34 963879129

Email: lpalmero@csa.upv.es

Scientific Comitee

Stefano Bertocci

Università degli Studi di Firenze

Javier Cárcel Carrasco

Universitat Politècnica de València, Spain

Olivier Chamel

Florida A&M University

Rosa María Domínguez Caballero

Universidad de Sevilla, Spain

Antonella Guida

Università degli Studi della Basilicata, Italy

Stefania De Gregorio

Università degli Studi dell'Aquila, Italy

John Hughes

University of West of Scotland, United Kingdom

Özlem Lamontre-Berk

École Nationale Supérieur d'Architecture de Lyon, France

Renato Morganti

Università degli Studi dell'Aquila, Italy

Sandro Parrinello

Università di Pavia

Tiziana Poli

Politecnico di Milano, Italy

Donatella Radogna

Università degli Studi "G. D'Annunzio" Chieti-Pescara, Italy

Adriana Rossi

Seconda Università degli Studi di Napoli, Italy

Ali Taha Omar

*Italian-Egyptian Center for Restoration and Archaeology (CIERA),
Egypt*

Rafael Temes Córdovez

Universitat Politècnica de València, Spain

Humberto Varum

University of Aveiro, Portugal

Graphic designer

Enrique Mateo

Triskelion Diseño Editorial

Cover image by Luis Palmero Iglesias



UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA



FOCUS AND SCOPE

VITRUVIO Journal is an international research journal publishing articles with links to architectural technology and sustainability. The aim is to present original technical advances as well as innovative methods and applications in order to contribute to the sustainable development through the architecture.

The journal is a resource for sharing innovative researches with an interdisciplinary comparison.

The selection of papers complies with the protocols for scientific publication.

The peer review is done through a system of referees, experts in the field of research.

The journal is published twice a year and appears in digital version.

SECTION POLICIES

Editorial: open indexed

This section describes the point of view of experts in the topics related to the journal. Written by the editorial team or an invited author.

Research articles: submissions, open indexed, double blind peer review. The peer review will evaluate the coherence with the focus and scope of the journal, the technical quality, the technical impact and relevance and the presentation.

OPEN ACCESS POLICY

VITRUVIO Journal provides immediate open access to its content.

ETHIC AND BEST PRACTICES

VITRUVIO, in its commitment to ensure ethical and rigor of its content, follows the Declaration ethic and best practice of PoliPapers (service of the Universitat Politècnica de València to promote open editing of scientific electronic journals).

COPYRIGHT NOTICE

Online journal is published by UPV, being necessary to cite the source in any total or partial reproduction.

Unless otherwise stated, all content of this electronic edition is distributed under a license and distribution "Creative Commons Attribution-Non commercial 4.0" (CC-by-nc).

Publisher allows authors to upload their articles in institutional or subject repositories for their dissemination and preservation.

PRIVACY STATEMENT

The names and email addresses entered in this journal will be used exclusively for the stated purposes of this journal and will not be available for any other purpose or another person.

SUBSCRIPTION INFORMATION

Volume 6, 2 issues: 15€

Contact: pedidos@editorial.upv.es

PRINTED IN SPAIN BY: By print percom, s.l.

EISSN: 2444-9091

On line version:

<http://polipapers.upv.es/index.php/vitruvio>

EDITORIAL QUALITY CRITERIA

Vitruvio journal declares its commitment to respect the integrity of published works. For this reason, plagiarism is strictly prohibited and texts that are identified as either plagiarism or fraudulent content will be removed or unpublished. The journal will act in these cases as quickly as possible. By accepting the terms and agreements expressed by our journal, authors must ensure that the text and the materials associated with it are original (or that they have the publishing permissions) and that there isn't infringed copyright. Authors also have to justify that in case of joint authorship, there was full consensus of all authors involved and that the manuscript has not been previously presented or published in other media.

Expressed opinions are those of the authors and do not necessarily reflect the editorial opinion. All people listed as authors are responsible for the contents of the investigation by having contributed substantially in their physical execution and/or intellectually. Authorship is recognized for the contributions made to the field of knowledge, therefore, the author is responsible for agreeing with the team that took part in the conduct, and for the decision about the order of the authors.

Acknowledgements should be cited, explaining the sources of research funding (if any) and aid, substantial advice or recommendations made by third parties.

COPYRIGHT NOTICE

Hard copy and online journal is published by UPV, being necessary to cite the source in any total or partial reproduction.

Unless otherwise stated, all content of this electronic edition is distributed under a license and distribution "Creative Commons Attribution-Noncommercial 3.0 Spain" (CC-by-nc).

VITRUVIO is not responsible for any copyright of the images reproduced in the texts. These are the responsibility of the authors in accordance with the arrangements set out in the call for submissions.

© texts: authors

© images: authors/institutions

Table of contents

Editorial Team	iv
Contact	iv
Focus and scope	v
Editorial Donatella Radogna	viii
Interview Benedetta Tagliabue	2
Reusing railway infrastructures in the spirit of circular theory. A contribution to an operational concept Ana Cardoso de Matos and Fernanda de Lima Lourencetti	12
Resilient connections Adriana Rossi and Sara Gonizzi Barsanti	24
When construction was linear. Analysis of the energy sustainability of social housing in Spain (1939-1989) Aurora Martínez-Corral and Domingo Cuéllar	38
Sustainability of the Build Environment and its Impact on User Performance. Case Study Polis University Frañeska Korançe	56
The circular design for a school in conditioned <i>Quercus cerris</i> hardwood glulam Francesco Paolo R. Marino, Filiberto Lembo and Caterina Di Lucchio	72
Sustainable and traditional technologies in Kutahya historic houses and their contribution to circularity: the case of Lajos Kossuth house Betül Ankaralığıl and Gülşen Dişli	92
Circular economy strategies for adaptive reuse of residential building Cristiana Cellucci	110

Editorial

The contemporary scenario gives an increasingly higher complexity to the project of the built environment, determined by the quantity of factors involved and by the crisis that afflict them. Architecture has always followed the evolution of contexts and people, but today it is called upon to absorb radical changes that do not only concern formal or functional aspects but the survival of the planet and of men. If *firmitas* remains an invariable factor, even if it acquires complexity for the risks given by natural disasters, *utilitas* and *venustas* are destined to broaden their meanings. In fact, today the usefulness of a building is not only directly proportional to the possibilities of using it immediately but also compared to the possibilities that it can offer in the future (considering the conditions of the economic and health crisis). The concept of beauty of architecture has also overcome formal issues to be realized through the harmony between building systems, natural cycles of ecosystems and the quality of human life. It is no longer enough giving or giving back architectural quality to the building but it is urgent to seek a 360° quality, reconsidering the relationship between nature and buildings. The current reality configures particularly articulated demand frameworks, to whom rather than deciding if to demolish, transform or preserve we have to 'design' sustainable development processes of building systems and contexts as a whole. In the design activity, besides having to consider with particular attention requirements such as adaptability and flexibility because they are fundamental to prolong the life of buildings, it is necessary to bring the concepts of reuse and recycle back to the works to be carried out (both for new and existing buildings). Therefore the project can no longer only respond to the intervention needs of the present but must provide a predisposition to the evolution processes to satisfy future needs. Architecture should not only be built to become a real estate but it must also be built to externalize the character of a "built organism" and combine with natural cycles. The material-constructive choices should also consider among the available resources, those that can give not only excellent technical results but also advantages for people and for the planet. In this direction, the problems resolution can become the trigger for sustainable development processes if it is possible "to put into operation" the resilience capacities of places and individuals.

The writings in this issue of Vitruvio (*Circular construction, technology and architecture*), decline in different directions the need to find new and shared design approaches, dictated by the just described scenario. The issue of circularity is faced, both in material terms (products and technical solutions) and in immaterial terms (performance of the spaces), at different scales and contexts.

Reflections are proposed on the relationship between the sustainability of the built environment and the ability of building systems to meet evolving needs. The circularity of the building is also addressed, presenting patented technical solutions able to simplify and speed up assembly and disassembly operations, to promote systems that can be reused and change location, with particular reference to emergency situations or the living needs. With this in mind, the project of adaptability becomes the key for defining and implementing resilient solutions. The articles also offer a critical reading of the (linear) architecture built before the development of the circularity concepts, to focus on the actions necessary to achieve a performance adjustment of public housing. Still with reference to this type of building, reflections are developed and studies are presented on the theme of regeneration aimed at achieving adaptive solutions to the scales of individual environmental units, accommodations, buildings and public spaces. Then they present material-construction solutions oriented towards circularity that is to trigger development processes through a project aimed at sustainability, adaptability, disassembly and recycling. Characteristics of sustainability are also found in some examples of traditional Turkish architecture which reveal excellent functioning in terms of comfort (temperature, ventilation, natural lighting) with consequent minimum energy consumption. For these buildings, analyses and developments are presented to re-propose the principles of sustainability in a new circular architecture. Another central issue of circular architecture that is dealt for the abandoned buildings and networks (as a result of processes of deindustrialisation), such as the disused railway heritage. Building reuse therefore becomes an important issue and acquires new roles as it allows “on standby” resources to be put back into operation and to design architectures that hopefully should never go “on standby».

The articles contained in this issue bring out various aspects and lines of research that can be further investigated and expanded to promote a complete development of the circular architecture concept.

Donatella Radogna