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Adaptive reuse scenarios

Original
Adaptive reuse scenarios / Robiglio, Matteo; Russi, NICOLA PAOLO; Vigliocco, Elena - In: The Future Urban Legacy Lab. A Report. 2017-21 / Coricelli F., Marini L., Robiglio M.. - Torino : Future Urban Legacy Lab - Politecnico di Tprino, 2021. - ISBN 978-88-85745-69-8. - pp. 84-90

Availability:
This version is available at: 11583/2977115 since: 2023-03-16T11:49:34Z

Publisher:
Future Urban Legacy Lab - Politecnico di Tprino

Published
DOI:

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21 December 2024

the Future *Urban Legacy* Lab

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a report 2017-2021

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One of the main challenges of *FULL* is to combine consistent research with a rich program of talks, lectures, and teaching. In this table of contents the activities of the Centre are separated by the research section for clarity, but in reality are mutually interconnected.

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FULL

Future *Urban Legacy* Lab is an interdepartmental centre of the Politecnico di Torino that explores, imagines and designs the future of global and local urban legacy embodied in city form.

FUTURE

/ˈfjuːtʃər/ ▪ noun

A period of time following the moment of speaking or writing; a time regarded as still to come.

URBAN

/ ˈəːb(ə)n / ▪ adjective

In, relating to, or characteristic of a town or city; e.g. ‘the urban population.’

LEGACY

/ /ˈleg.ə.si/ ▪ noun

A situation that exists now because of events, actions, etc., that took place in the past.

LAB

/ləˈb/ ▪ noun

A room or building equipped for scientific experiments, research, or teaching, or for the manufacture of drugs or chemicals.

FAQ

How is an interdisciplinary research centre structured? how many resources are involved and what are the outputs?

18

THE LAB | PEOPLE

Departments

7 departments,
59 people,
33 disciplinary
expertise
fields.

DAD

Urban and architectural design, landscape design, construction technology, urban history, heritage preservation and restoration, geomatics.

DIST

Urban planning, urban geography, urban economics, project evaluation.

DET

Digital networks in urban settings, device-to-device communications.

DIGEP

Innovation economics and innovation management.

DIATI

Environmental assessment, urban environmental quality indicators, remediation techniques for urban post-industrial sites.

DAUIN

Big data, information technologies, public data management and policies in cities.

DENERG

Urban energy networks and grids, renewable energies in urban settings.

Team *FULL*

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Didem Turk
Alberto Valz Gris

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Federico Accorsi
Louis Andrianaivo
Michele Barale
Natalia Bonilla
Caterina Montipò
Maicol Negrello
Emanuele Protti
Elisa Sirombo

THE LAB | PEOPLE | MAP

FULL
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Elena Vigliocco
Federico Coricelli
Giulia Sammartano
Nicola Russi
Lucia Baima
Nannina Spanò
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Maria Paola Repellino
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Luca Galleano
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Michele Simonetti
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Guglielmina Mutani
Marco Simonetti

DENERG PhD
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Marco Masoero
Enrico Fabrizio
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DAD
Carlo Olmo
Roberta Ingaramo
Davide Rolfo
Cesare Tocci
Francesca De Filippi
Alberto Bologna
Nina Rappaport

DASP
Caterina Quaglio
Caterina Montipò
Michele Barale
Maicol Negrello

Ludovica Rolando
Silvia Cafora
Elena Guidetti
Didem Turk

Matteo Gianotti
Valerio Palma
Emauele Protti
Ilaria Tonti
Emilio Abbate

DIST
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Carlo Salone

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Luigi Buzzacchi
Giulio Zotteri
Andrea Pollio
Simone Veglio

Antonio De Marco

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Agostino Strina

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Laura Rondi

DIGEP PHD
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Giuseppe Scellato
Elisabetta Raguseo

DET
Paolo Giaccone
Giacomo Rosso

DET PHD
Marco Rapelli

Claudio Casetti

Louis Andrianaivo

DAUIN
Juan Carlos de Martin
Antonio Santangelo
Antonio Vetrò

Francesco Ruggero

DIATI
Federico Accorsi
Tiziana Tosco
Luigi Sambuelli

Claudio Comoglio
Alessandro Casasso
Roberto Revelli

FULL's 7 departments collaborate in the development of 4 PhD programs. FULL collaborates with several external researchers from Politecnico di Torino.

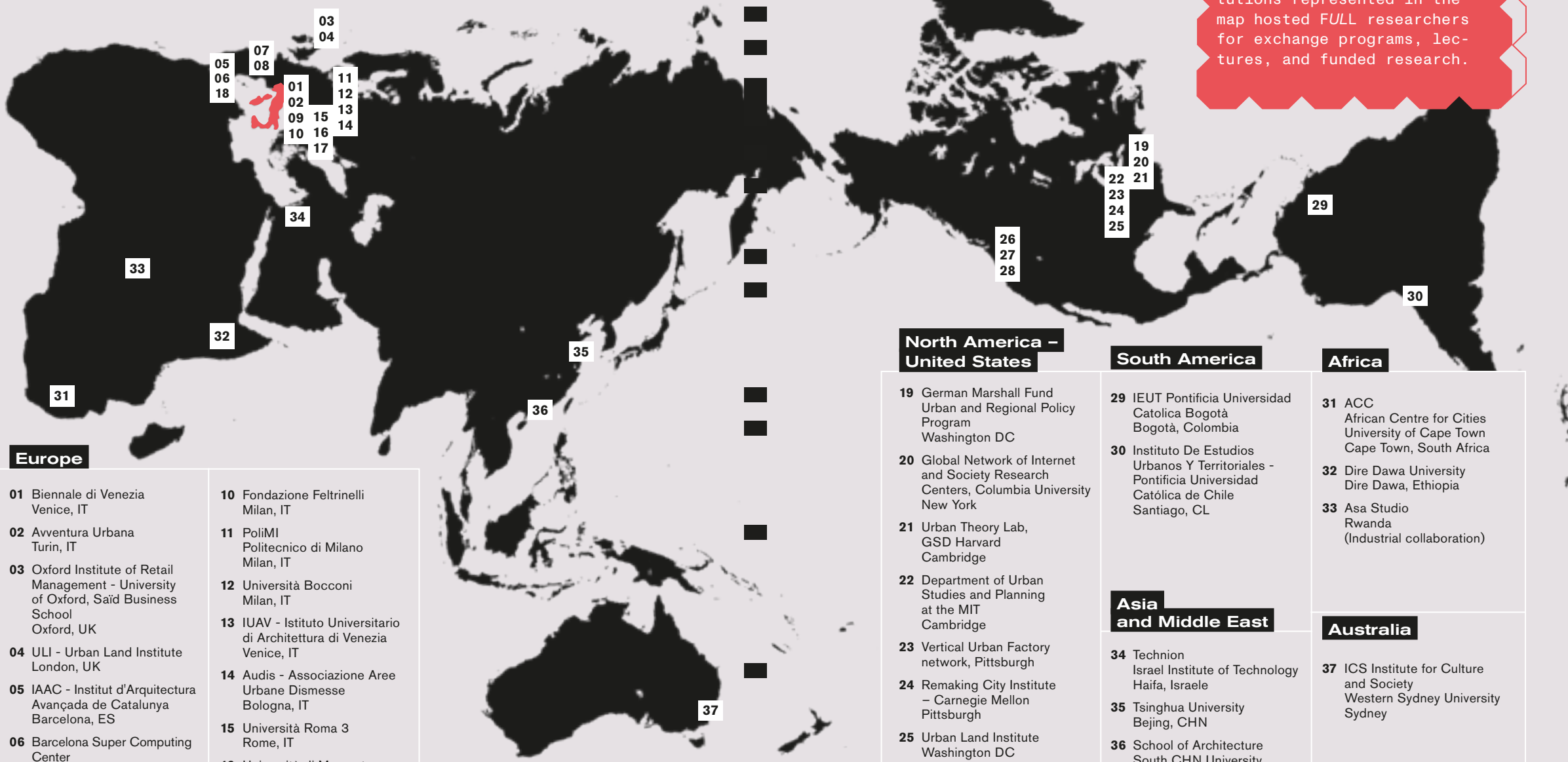
CAPTION:

FULL — DIST = affiliations

= connections

THE LAB | OUTREACH

The map shows the institutions that collaborated with *FULL* in the past years. The institutions represented in the map hosted *FULL* researchers for exchange programs, lectures, and funded research.



Europe

01 Biennale di Venezia
Venice, IT

02 Avventura Urbana
Turin, IT

03 Oxford Institute of Retail Management - University of Oxford, Saïd Business School
Oxford, UK

04 ULI - Urban Land Institute
London, UK

05 IAAC - Institut d'Arquitectura Avançada de Catalunya
Barcelona, ES

06 Barcelona Super Computing Center
Barcelona, ES

07 Baumeister - BMa
Bruxelles, BE

08 Paul Andreu Architecte
FR (Industrial collaboration)

09 Links Foundation
Turin, IT

10 Fondazione Feltrinelli
Milan, IT

11 PoliMI
Politecnico di Milano
Milan, IT

12 Università Bocconi
Milan, IT

13 IUAV - Istituto Universitario di Architettura di Venezia
Venice, IT

14 Audis - Associazione Aree Urbane Dismesse
Bologna, IT

15 Università Roma 3
Rome, IT

16 Università di Macerata
Macerata, IT

17 UniSalento
Lecce, IT

18 Urban Next / ACTAR
home based in New York, USA; office in Barcelona, ES

North America – United States

19 German Marshall Fund Urban and Regional Policy Program
Washington DC

20 Global Network of Internet and Society Research Centers, Columbia University
New York

21 Urban Theory Lab, GSD Harvard
Cambridge

22 Department of Urban Studies and Planning at the MIT
Cambridge

23 Vertical Urban Factory network, Pittsburgh

24 Remaking City Institute – Carnegie Mellon
Pittsburgh

25 Urban Land Institute
Washington DC

26 Global Metropolitan Studies Center University of California
Berkeley, California

27 UCLA - University of California, Los Angeles

28 UC Davis Art University of California
Davis

South America

29 IEUT Pontificia Universidad Catolica Bogotà
Bogotà, Colombia

30 Instituto De Estudios Urbanos Y Territoriales - Pontificia Universidad Católica de Chile
Santiago, CL

Asia and Middle East

34 Technion
Israel Institute of Technology
Haifa, Israele

35 Tsinghua University
Bejing, CHN

36 School of Architecture South CHN University of Technology, Guangzhou, Guangdong Province, CHN

Africa

31 ACC
African Centre for Cities
University of Cape Town
Cape Town, South Africa

32 Dire Dawa University
Dire Dawa, Ethiopia

33 Asa Studio
Rwanda
(Industrial collaboration)

Australia

37 ICS Institute for Culture and Society
Western Sydney University
Sydney

NON–PERFORMING LEGACIES

NPL

How to deal with heritage in a sustainable financial way that excludes museification?

The Italian peninsula is punctuated by large-scale heritage and post-industrial complexes with no economic plan or vision for their regeneration. The following researches tackles the issue from an interdisciplinary perspective.

What do we mean by the expression Non-Performing Legacies? The term derives from finance: Non-Performing Loans. Accordingly, non-performing cultural legacies can be understood as the assets of cultural interest that cannot produce a sufficient value to cover the initial investment for their maintenance and renovation. At the same time, the non-performing legacy has no potential to undergo a process of museification. The abandoned medieval fortress of Alessandria is a typical example of a non-performing legacy, nor can it become a museum of such a scale nor remain as a void in the city.

These complex socio-technical problems require an interdisciplinary approach to tackle the different issues they raise. Non-performing legacies are not limited to the domains of historical heritage. The post-industrial city leaves behind empty boxes with undefined futures. The PhD researches the *Potential of Form*, the American spaces of production, and the *Workspace [R]Evolution* try to understand how to combine innovative preservation with new modes of production.
Finally, *Adaptive Remediation* investigates all the unseen layers below and above the remains of time.

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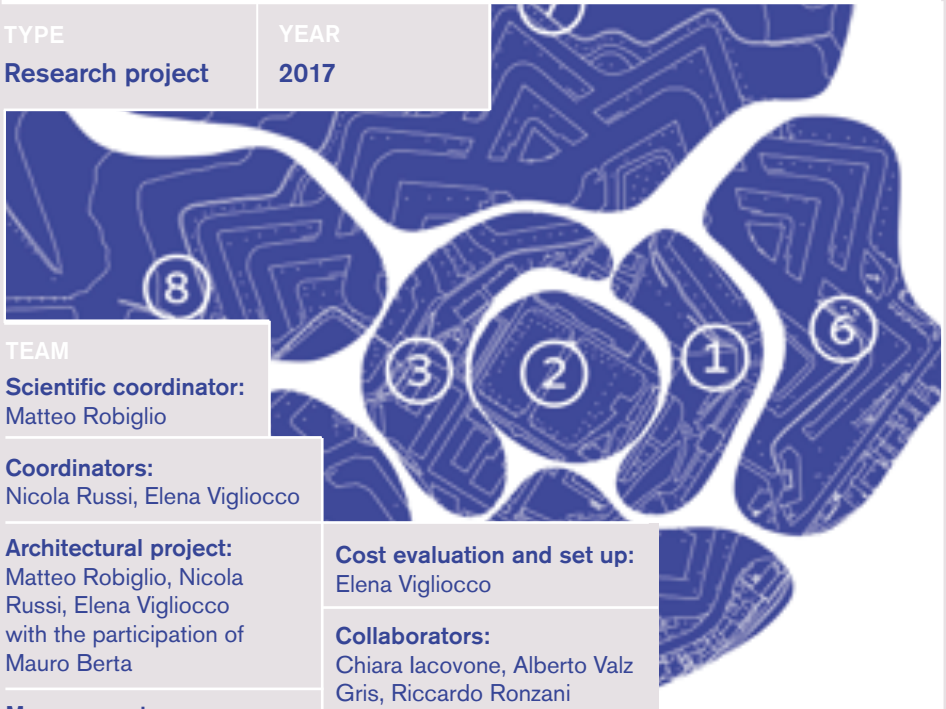
Adaptive reuse scenarios

TYPE
Research project

YEAR
2017



TEAM

Scientific coordinator:
Matteo Robiglio

Coordinators:
Nicola Russi, Elena Vigliocco

Architectural project:
Matteo Robiglio, Nicola Russi, Elena Vigliocco with the participation of Mauro Berta

Management model definition:
Giulio Zotteri, Roberta Taramino

Cost evaluation and set up:
Elena Vigliocco

Collaborators:
Chiara Iacovone, Alberto Valz Gris, Riccardo Ronzani

Operative coordinator:
Laura Martini

The incremental recovery strategy, outlined in the research project *La Cittadella di Alessandria. Scenari di riuso adattivo* (Adaptive Reuse Scenarios for the Cittadella of Alessandria), developed in 2017 by the Department of Architecture and Design of the Politecnico di Torino on assignment for Compagnia di San Paolo, begins to redefine the boundaries and possibilities of

The uncertain destiny of an object as the Cittadella di Alessandria is shared by a multitude of abandoned heritage sites in Italy.

reuse of this architecture that is resistant to change, deeply isolated, disused and oversized. The identification of three Cittadella landscapes and eight environments helps to establish an initial hierarchy of the 26 buildings inside and unveil the latent potentialities of a unitary but internally complex and heterogeneous building. The resulting image revealed an unclear spatial complexity, potentially able to house extremely different activities. The research identified an initial chart of flexible infrastructure devices that form the heart of a strategy aimed at minimal, almost light, intervention on historical artefacts that is still able to immediately reactivate the Cittadella, making it safe and usable.

Adaptive reuse strategy for oversized legacies

Matteo Robiglio, Nicola Russi, Elena Vigliocco

The Cittadella of Alessandria is a Savoy fortress that has survived undamaged. Until 2007, the Cittadella was a military garrison, but today it is owned by the Italian Ministry of Cultural Heritage and Activities and Tourism (MIBACT) - Superintendency Fine Arts and Landscape of the provinces of Alessandria, Asti, Biella, Cuneo, Novara, V.C.O. and Vercelli, which is interested in its cultural preservation and enhancement.
In the early '90s, before it was decommissioned, the Italian Government, the Piedmont Region, the Province of Alessandria and the City of Alessandria launched a series of administrative and research initiatives aimed at enhancing the Cittadella on account of its important cultural value. Despite the efforts,

the outcomes were not successful and the Cittadella, emptied of all its original activities, seemed destined toward unstoppable decline. The era of investment in flagship assets, such as the Palace of Venaria, was over. The main cause of the failure of these attempts was the interpretation of the Cittadella as a unitary, inviolable system. All the hypotheses of new uses and economic interventions crashed into the oversized dimension of the site. At the same time, the Cittadella has become a place where spontaneous re-appropriation practices and temporary organised events take place. In 2012, it became a FAI 'Place of the Heart' and today some cultural activities and events have found a place here, giving new life to these abandoned spaces. In 2016, MIBACT took over ownership of the area and the process of renovation reached a turning point: the new aim was no longer to identify a new use for the Cittadella, but to preserve it through focused and efficient interventions to safeguard and restore it.
Thanks to the active participation of MIBACT, the research represents the first step in a complex sequence of safeguarding interventions for this oversized cultural heritage.

The research aims were:

1. through an inclusive approach, integrate diverse opinions – social, cultural, political – into a cohesive vision;
2. translate that vision into a coherent plan of interventions and uses with a temporal progression developed according to opportunities of urgency and financing;
3. ensure the sustainable implementation of the plan.

Turning a shared vision into a reality – into a truly great place – means finding the patience to take small steps, to truly listen and to see what works best in this particular context. For these reasons, the research included two opportunities for discussion with stakeholders.
Two workshops took place at the Cittadella at two different times during the research project with the aim of (1) collecting requests and allowing stakeholders to discuss them and (2) returning at the intermediate phase of the work in order to collect feedback.

The Cittadella case study is a recurring theme in the protection of vast heritage buildings with low heritage density. This is a huge military site in a peripheral context that cannot be capitalised by simply conserving it nor used as an undifferentiated container or transformed through the selection of some elements to preserve and others to be altered. Given its huge size, the research identified an innovative approach that combines conservation needs, possible reuse and economic and management sustainability.

Previous iconographic and historical research studies represented the 'state of the art' and formed the base on which the project layout was developed. The aim of the research focused on the strategic aspects of the adaptive reuse process, taking on board previous historical research as scientific support, but neglecting to deepen the material degradation of the buildings, which could be explored in a successive knowledge phase.

The design research analysis has been developed both through a new interpretation of the architectural and landscape features of the Cittadella of Alessandria and through a careful recognition of its contemporary uses. The spatial aspects investigated have been useful in identifying existing values, latent potentialities and criticalities and have formed the starting point for drafting a strategic proposal strictly connected with the economic resources available and the development over time. Starting by observing people's spontaneous repossession process, as described above, the placemaking developed capitalises the local community's assets, inspiration and potential, with the intention of creating a renewed public space at the Cittadella that could promote people's wellbeing.

The large dimensions of the Cittadella are as follows:

Citadella extension:	**444.000**	**m²**
Permeable area:	**408.000**	**m²**
Covered area:	**36.000**	**m²**
Built surfaces:	**115.000**	**m²**
Used surfaces:	**7.000**	**m²**
Wall bastion surface:	**90.000**	**m²**

To these numbers, the research adds its interpretation that the historical complex consists of three landscapes and eight main environments, with 26 buildings that help to establish an initial hierarchy of spaces. These numbers have unveiled the latent potentialities of this unitary but also articulated and heterogeneous complex: this new interpretation of the Cittadella enriches the traditional image of a unitary architecture that, through its decomposition, reveals its specific, latent and non-visible potentialities. The resulting image of the Cittadella shows its less evident spatial complexity, extremely rich and potentially able to accommodate activities and uses that are extremely different in consistency, function and size and that may be established at different times.

Since the preservation of the historical complex is the aim of the strategy designed, the project of adaptive reuse has identified: (1) an initial chart of infrastructure devices combining the most urgent structural operations of consolidation; (2) the main infrastructural backbones; and (3) the new architectural mechanisms that might reactivate the Cittadella, making it safe, usable and open.

The research has (1) identified the interventions on the buildings and military infrastructures and (2) designed a series of flexible and (possible) reversible devices that were the main instrument of the action strategy aimed at intervening as little as possible on the material consistency of this historical complex. Combined with the temporal sequence of introduction of these devices, the approach to the Cittadella evolved the architectural restoration project of the Cittadella from a 'static' horizon, durable but also rigid and expensive, into a 'dynamic' process, renewable in time; the setting for multiple kinds of scenarios.

The strategy of intervention designed an incremental process whereby the Cittadella becomes a design laboratory. The structural sequence of interventions brings together the ordinary restoration project of some buildings – that starts and ends in a limited time period and has government grants and a defined use layout – and a series of interventions developed over time but brought together by a unitary design intention. In short, the research identified a new 'active safeguarding strategy'.

The gap between funds needed and funds available is enormous:

Restoration estimated cost:	**€200**	**millions**
Economic Governmental available resources:	**€34**	**millions**
Difference:	**€166**	**millions**

The safeguarding strategy was designed starting with an analysis of the last projects to renovate the Cittadella. The analysis underlined that, more than the big top-down projects – almost all stopped because of the disproportion between funds available and funds required –, small bottom-up initiatives have made people aware of the Cittadella and made it loved and protected by its users. By confirming existing uses, the core of the first step of the strategy was to enhance the initiatives that made the Cittadella a lively public place.Based on this assumption, the research study proposed a light and agile management model. Through a minimal set of interventions, ranging from the simple preservation to the insertion of the devices necessary for the safe use of spaces, the sequence of incremental interventions

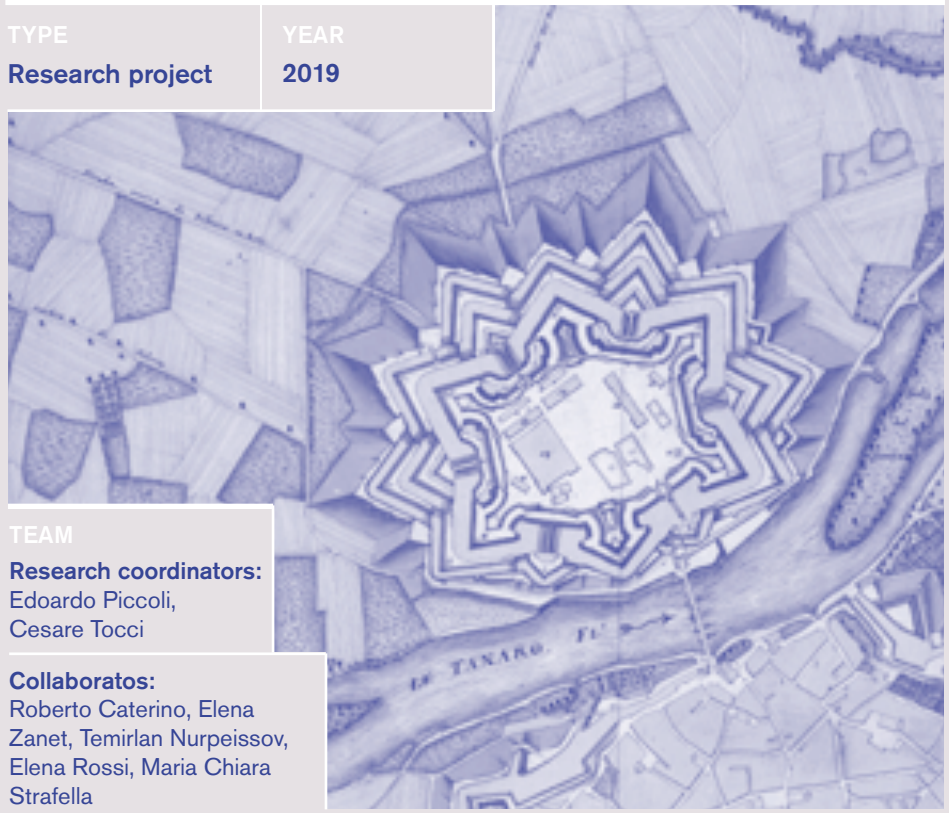
formed the core of this 'active safeguarding strategy'. The first tranche of funding (2017-2023) represents the trigger – with immediate effect – of the entire programme of adaptive reuse that, governed by a sustainable management model, will be able to attract public and private operators. This first step consists of defining a timely series of interventions aimed at halting the deterioration of the buildings and fortifications and enabling a peaceful reconquest of the Cittadella.

The strategy described concluded as follows: (1) the subjective selection of architectural elements and their consequent sacrifice, was not functional to the hypothesis of 'updating' of the Cittadella – structures and buildings with poor value were more interesting for an adaptive reuse project because they can absorb humble uses, such as stores or services; (2) it was necessary to introduce technological, material and infrastructural systems necessary to reactivate this historical heritage; (3) the 'new' elements added by necessity must have a character of autonomy and clear legibility; (4) the adaptive reuse strategy must absorb local potentialities because of its aim of enhancing place identity through the capitalisation of current resources.
To preserve this cultural heritage, the project did not 'subtract' but 'add'. These were the interpretative keys of the entire proposal and the challenges of the project.

The buildings inside the Cittadella of Alessandria

TYPE
Research project

YEAR
2019



TEAM

Research coordinators:
Edoardo Piccoli,
Cesare Tocci

Collaboratos:
Roberto Caterino, Elena Zanet, Temirlan Nurpeissov, Elena Rossi, Maria Chiara Strafella

The research examines the construction history of the buildings inside the Cittadella of Alessandria. While these buildings are unquestionably part of Italian national heritage, they have never been considered, up to this day, in their complex materiality. The research aims to cross-reference archival information on the Cittadella's early history with close observation of the buildings,

NON-PERFORMING LEGACIESS | OUTCOMES

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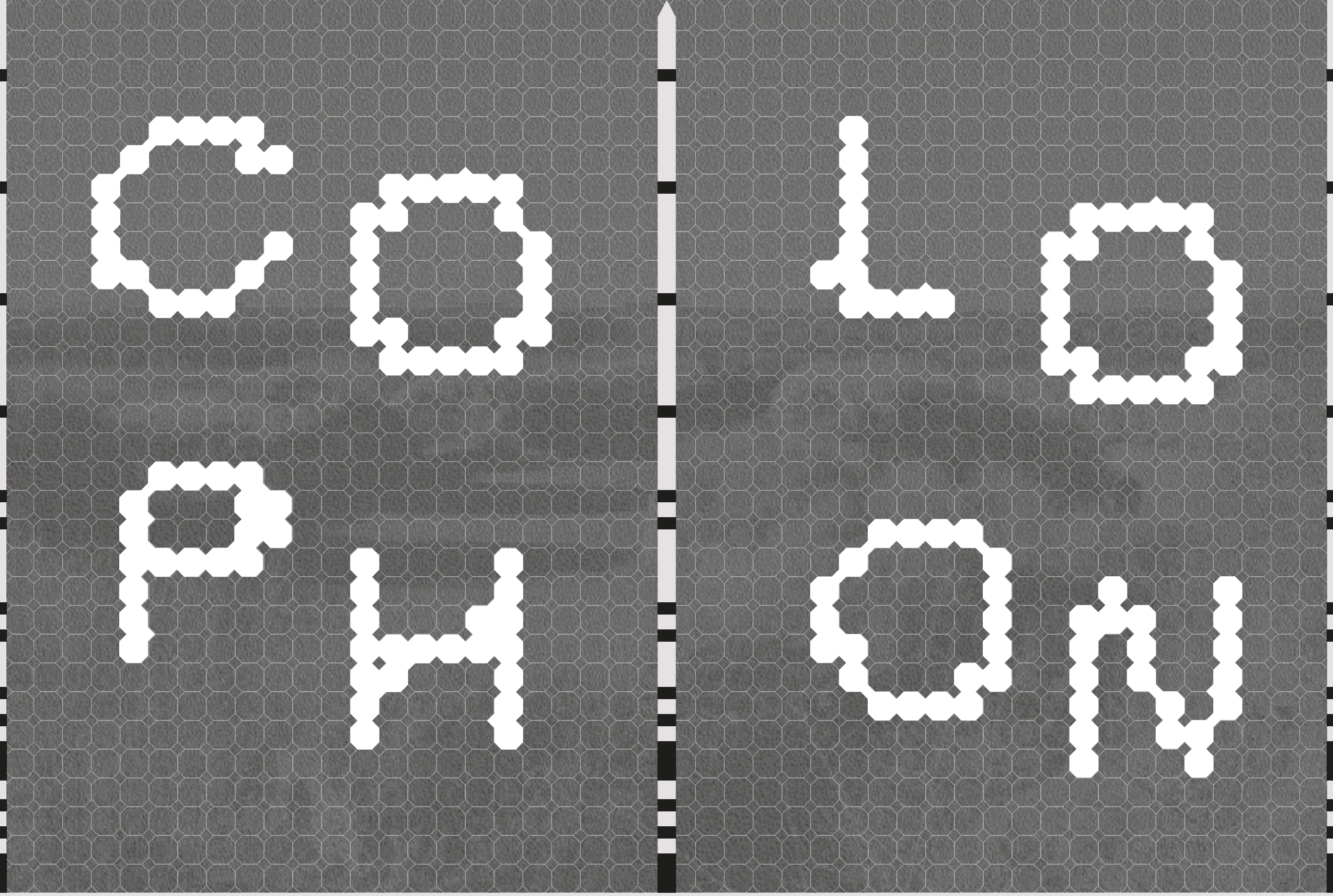

COLOPHON | BIOGRAPHIES

Project manager

Matteo Robiglio

is an architect and urban designer. He is a Full Professor at Politecnico di Torino. After 20 years of practice in community architecture and urban regeneration with Avventura Urbana, he founded in 2011 with Isabelle Toussaint the office TRA (lit.: in-between). In 2014 TRA and the community foundation Benvenuti in Italia jointly founded the non-profit social innovation start-up HOMERS, recognized as PoliTo spin-off, promoting bottom-up cohousing projects for the reuse of abandoned buildings. He was a member of the Scientific Committee of the Centre for African Studies, of Rebuild and of the recovery project of Giancarlo De Carlo's University Colleges in Urbino of the Getty Foundation. He is a German Marshall Fellow in Urban and Regional Studies. He has also been a visiting lecturer in many universities such as the Carnegie Mellon of Pittsburgh, the Xi'an Jiaotong-Liverpool University in Suzhou, the Technion of Haifa, and the MIT in Boston.

Executive manager

Laura Martini

is an architect PhD, since 2017 she is the executive manager at F*UL*L – The Future *Urban Legacy* Lab. Her research interest lies in the area of urban theories, psychogeography, and urban countercultures. As part of the informal research group luoghisingolari.net and as a PhD candidate at Politecnico di Torino she did field research on the relationships between underground, radical spatial practices, real estate values and metropolitan conflicts.She has co-authored with D. Vazquez, the book: Che cosa è un luogo singolare? Scritti del Centro di Ricerca dei Luoghi Singolari. 2004-2016. 2018, Aracne Ed., Roma.

Deputy project manager

Francesca Governa

is a PhD in Spatial Planning, she is an urban geographer and Full Professor of economic and politic geography. She is part of the Academic Board of the PhD in Urban and Regional Development. She is involved in research activities at national and international level on four main issues: local development processes and policies; urban margins and spatial justice; urban development and the rescaling of the urban realm; Urban China and urbanization processes in the Global South. She has carried on fieldworks in European, North African and Chinese cities.

Scentific Board

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is Full Professor since 2000 at the Politecnico di Torino, where he teaches courses in urban economics and industrial organization. He also taught insurance economics and financial markets economics in various universities. His research interests lie in the area of urban and regional economics, insurance and financial markets (in particular, contract theory, ownership structure, venture capital contracts, and innovation incentives), economics of risk and uncertainty, regulation and public policies, firm size distribution and spatial competition, economics of professional sports.

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is a Full Professor at the Department of Control and Computer Engineering, Politecnico di Torino, Italy.He has published more than 200 papers in peer-refereed international journals and conferences on the following topics: Transport and network protocols in wired networks, IEEE 802.11 WLAN, Vehicular networks, Ad hoc and sensor networks.Also given Tutorials on vehicular networks at major IEEE Conferences, including IEEE ICC, IEEE Globecom, IEEE CCNC and IEEE VTC. He has served in the Technical Program Committees of the main international conferences in the networking field.

Juan Carlos De Martin

is a Full Professor at the DAUIN Department of the Polytechnic of Turin, he co-founded and co-directs the Nexa Center of Internet and Society. Since 2011, he is a Berkman Faculty Fellow at the Berkman Center for Internet & Society of Harvard Universityand Senior Visiting Researcher at the Internet and Society Laboratory of Keio University (Tokyo). It is known for its activities in the Internet and the Society, with particular attention to issues of copyright in the digital age and net neutrality. Often writes in the daily "La Stampa" as a columnist on issues related to digital technologies and their impact on society.

Enrico Fabrizio

a PhD in Energy Technologies at the Politecnico di Torino and at the INSA de Lyon, since 2015 is Associate Professor at the Energy Department of Politecnico di Torino. From 2008 to 2015 he has been assistant Professor at the DISAFA Dept. of the University of Torino. He carries out research activities in the fields of zero-energy buildings performance simulation and optimization, environmental control for animals and plants, impacts of renewable energy technologies and energy poverty issues.

Francesca Frassoldati

is Associate Professor at the School of Architecture of Politecnico di Torino since December 2015. From 2008 she has been working at the South China University of Technology. Out of a long-term commitment to understanding processes, tensions, and spatial effects of socio-economic transformations in the habitable world, her major lines of work address rural-urban interaction and urban regeneration processes with particular emphasis on the use of spatial design in public discourse.

Paolo Giaccone

is currently Associate Professor in the Department of Electronics Telecommunications of Politecnico di Torino.Between August 2000 and September 2001 he was visiting researcher in the Information Systems Networking Lab of Prof. Balaji Prabhakar at the Electrical Engineering Department of Stanford University. In February 2002 he obtained the PhD degree at Politecnico di Torino, with a dissertation about “Queueing and scheduling algorithms for high performance routers”.

Marco Carlo Masoero

holds MSc degrees in Civil Engineering from Politecnico di Torino and in Mechanical and Aerospace Engineering from Princeton University. He is a Full Professor at Politecnico di Torino in the Department of Energy “Galileo Ferraris”(1995-1999 and 2012-2015). He is International Faculty Affiliate in the Department of Mechanical and Industrial Engineering of the University of Illinois at Chicago. His teaching, research and consulting activity focuses on two main areas: Energy Efficiency in Buildings and Technical Systems, and Applied Acoustics.

Antonio Santangelo

is a semiologist. He studies the relationship between digital technologies and society. He carries out this research at the Nexa Centre for Internet & Society of the Polytechnic of Turin, together with an interdisciplinary group, composed of computer engineers, lawyers and economists.He teaches Semiotics and Philosophy of Language, Semiotics of Text and New Media Languages at the eCampus Telematics University and Semiotics of Television at the University of Turin.

Giuseppe Scellato

holds a PhD in Economics and is a Full Professor at the Department of Management and Production Engineering (DIGEP) and the Future *Urban Legacy* Lab (F*UL*L) of Politecnico di Torino, where he teaches Corporate Finance in graduate programs and Economics and Management of Innovation in post-graduate programs. During 2015-2018 he has been the Vice Dean of the College of Industrial Engineering and Management. Since November 2018 he is the president and CEO of the Innovative Enterprise Incubator of Politecnico di Torino.

Tiziana Tosco

is an Associate Professor at DIATI - Politecnico di Torino since April 2018 and formerly She was Tenured Assistant Professor in the same department.She is co-responsible of the Environmental nanotechnologies Laboratory at DIATI and the responsible for Internationalization of the Environment and Land Engineering Bachelor and Master programs. She is Professor of the MSc course Reclamation of Polluted sites and in other courses of the MSc of Environmental Engineering and in the Specializing Master Program of Water for Civil and Industrial uses at Politecnico di Torino.

Antonio Vetrò

is Assistant Professor at the Department of Computer and Control Engineering, at Politecnico di Torino. He is also Senior Research Fellow at the Nexa Center for Internet and Society and at the Future *Urban Legacy* Lab, both at Politecnico di Torino. Currently, Antonio is conducting research on how to detect and mitigate potential discriminations deriving from biases in the data and in the algorithms of decision systems.

Giulio Zotteri

is Full Professor at Politecnico di Torino where he currently teaches Distribution Logistics, Marketing, and Urban and Regional Economics. Giulio has published more than 20 articles in international journals on the above topics. Giulio is part of the Consortium on Operational Excellence in Retail and has studied the retail sector for more than 20 years.

Faculty

Edoardo Piccoli

is Associate Professor since 2000 at the Politecnico di Torino, where he teaches courses in urban economics and industrial organization. He also taught insurance economics and financial markets economics in various universities. His research interests lie in the area of urban and regional economics, insurance and financial markets (in particular, contract theory, ownership structure, venture capital contracts, and innovation incentives), economics of risk and uncertainty, regulation and public policies, firm size distribution and spatial competition, economics of professional sports.

Nina Rappaport

is an architectural critic, curator, and educator. She is publications director at Yale School of Architecture and editor of the biannual publication Constructs (numbering 35), the exhibition catalogs (numbering 48), as well as the school’s book series (22 to date). She is the director of the project/think tank the Vertical Urban Factory, which includes an exhibition with graphic design by Sarah Gephart of MGMT Design and the exhibit design by Studio Tractor. The show was most recently displayed at EPFL's Archizoom in Lausanne, and the Gallery at Industry City, in Sunset Park, Brooklyn”.

Nicola Russi

is an architect and Associate Professor at Politecnico di Torino. He studied at TU Delft and at Politecnico di Milano, where he obtained his Phd in 2007. In 2008 he founded the architectural practice Laboratorio Permanente in Milan with Angelica Sylos Labini. He won the international competition for the masterplan of Farini and San Cristoforo railway yards, participated in the 16th and 14th Venice Biennale International Architecture Exhibition and received the Honour Mention for the Golden Medal for Italian Architecture in 2012 with the project "The landscape has no rear".

Luigi Sambuelli

took service as a Full Professor of Applied Geophysics at the Università di Cagliari and in November 1995 he moved to the Politecnico di Torino with the same role. From April 2015 he is full Professor of Applied geophysics at the Politecnico di Torino. His main interests are the application of geophysics to archaeology, architecture, tunneling, geotechnics and hydrogeology.

Nannina Spanò

is Associate Professor in the discipline 08-Civil engineering and architecture / 04: Geomatica from 2014, at Politecnico di Torino - Department of Architecture and Design. He teaches several courses in the I, II and III level programs in Architecture (bachelor course) and Architecture for sustainable design (Master of science course) and Geomatics for Architectural and Landscape Heritage (doctoral course); since 2007 he has been a member of the board of Professors of the PhD program in Architectural and Landscape Heritage.

Elena Vigliocco

is an architect, Phd in Theories and Construction of the Architecture (2005), since 2017 she is Assistant Professor in Architectural and Urban Design at the Politecnico di Torino. In 2019 she is Visiting Professor at the Pontificia Universidad de la Javeriana in Bogotà. Her research interests are focused on issues concerning adaptive reuse of cultural heritage. As architect, she is author of the renovation of the Astra Theatre and of the Paideia Centre both in Turin.

Research fellow

Federico Accorsi

is an environmental engineer specialized in the field of reclamation and monitoring of contaminated sites. He acquired a high level of technical / commercial knowledge, holding positions of responsibility for projects located throughout the national territory and for each phase of the project: sizing, reclamation, offer formulation, personnel supervision and management of construction site, communication with Italian / foreign customers. He focuses on: integration of the remediation processes in the architectural restoration project, monitoring and modeling of biogas emissions into the atmosphere.

Adriano Aimar

is an architect graduated from the Politecnico di Torino and Politecnico di Milano as an alumnus of the Alta Scuola Politecnica. His master thesis has been developed within F*UL*L and it explored the non-spatial relationships among urban venues based on the analysis of Instagram social urban data. His research work has been focusing afterwards on data analysis for urban and regional development. He is currently an MBA fellow at the Collège des Ingénieurs in Turin.

Lucia Baima

is an architect, PhD and Research Fellow at F*UL*L - Politecnico di Torino.
She holds a PhD in Architecture, History and Project. Her research activities investigate the role of Intensity as a dynamic parameter able to reveal the potential of spaces and projects to catalyze multiple uses and kinetic processes. Her doctoral dissertation and forthcoming book explore the concept of Intensity within the city of New York City. She collaborated as a teaching assistant in architectural and urban design studios at the Politecnico di Torino where she has graduated after a period of studies in Barcelona. Previously she worked with several architectural offices. For six years she has been a part of MARC Michele Bonino e Subhash Mukerjee Architects as project manager for several awarded projects. With MARC she participated at the 12th and 13th Biennale of Architecture in Venice. She is the author of several articles and publications on Intensity issues and co-curator of the special issue of UrbanisticaTre *Sharing of public spaces* (2015).

Caterina Baroglio

is Assistant Professor at the Department of Architecture and Design of Politecnico di Torino. She earned a PhD in History of Architecture and Urban Design in 2016 with a dissertation carried out between Turin and Columbia University in New York City. Bridging history and design, her research relates to urban regeneration processes, with a main focus on the spatial effects of urban rule and socio-economic transformations. From 2016 to 2018 she worked for the masterplan project of the Politecnico di Torino. Since 2018 she has been editor of the ARDETH - *Architectural Design Theory* magazine.

Angelo Caccese

is an architect. He graduated at Politecnico di Torino after a period of studies between Turin, Buenos Aires and Madrid. His master thesis, entitled *The Airbnb effect: architecture and urban consequences of a new way of trading homes* was carried out during a period of seven months as visiting student at School of Architecture of Madrid (ETSAM). He collaborated with several architectural offices and formed part of the research group LoCUS from the Universidad Politecnica de Madrid. He currently collaborates with F*UL*L and he is a freelance architect.

Daniele Campobenedetto

is an Assistant Professor in Architectural and Urban Design at Politecnico di Torino. He holds a PhD in History of Architecture and Town Planning from Politecnico di Torino and in Architecture from Université Paris Est. His research activities investigate especially the role of rules and bureaucracies in urban transformation. He has been part of the PoliTo Masterplan Team and he is a funder and an editor of the journal ARDETH - *Architectural Design Theory*.

Federico Coricelli

is an architect graduated from the University of Florence. He holds a PhD from Politecnico di Torino. He is the author of various articles and publications on housing issues. During the past years he worked for several architectural offices and collaborated independently in several competitions, some of them successfully awarded. He collaborated as teaching assistant in architectural design studios at the University of Florence and Politecnico di Torino. Since 2017 he is partner at UHO, an architectural office based in Paris.

Marco Cappellazzo

holds a master's degree in Architecture Construction and City with a thesis project developed on the areas of Parco di Porto Conte in Alghero. The purpose was to describe, through GIS and rapid mapping technologies contribution, the municipality's territory, leaving out the usual glance of coasts confined only for seaside tourism, and rethinking the legacy of military architectures from the IIWW as hubs to further new strategies of development both for tourism and for residence. He cooperates with lab G4CH and F*UL*L. His research deals with geo-spatial science techniques for the documentation of Cultural Heritage by use of GIS mapping and data analysis approach.

Luca Galleano

is an architect. He has graduated at Politecnico di Torino with a thesis entitled "Designing with autonomous relationship properties of complex systems: a parametric approach to achieve building sustainability". He is specialised in computational design and sustainability architecture, indeed is also a WELL AP and LEED Green Associate. He collaborated with several architectural offices, and he currently collaborates with F*UL*L as part of the WHO Covid-19 Helpdesk project and he is a freelance architect.

Antonio De Marco

is Assistant Professor at the Department of Management and Production Engineering (DIGEP) and the Future *Urban Legacy* Lab (F*UL*L) of Politecnico di Torino, holds a PhD in Economics and Complexity at Collegio Carlo Alberto and a M.Sc. in Management Engineering at Politecnico di Torino. In the last few years he has been involved as Research Assistant in a number of projects funded by the European Commission, gaining an in-depth knowledge of advanced methodologies for patent data-mining and technology intelligence.

Marianna Nigra

is a Research Fellow at Politecnico di Torino. She is an experienced Architect with a demonstrated history of working in the research industry and a PhD focused in Management, Production and Design from Politecnico di Torino. She has strong International experience, developed by collaborating with The Melbourne University, Australia; The Vrije Universiteit, Amsterdam; and Strathclyde University, Glasgow, Scoltand, and a number of French architectural practices in Paris, France. Her work focuses on the management of complexity in sustainable architecture, encompassing concepts of economy, building physics, and architectural design. She has collaborated with a number of Institutions in support of the definition of policies and strategies to enhance the sustainable development of the built environment. She is currently collaborating with the World Health Organization (WHO) to support the research against the diffusion of covid-19 in health infrastructure and public spaces.

Andrea Pollio

holds a PhD in Economic Geography and Urban Studies from the Institute of Culture and Society, Western Sydney University. His research interests coalesce around the relationship between urban economies and technological innovation in African cities. Andrea is currently Marie-Sklodowska Curie Fellow (grant no 886772) jointly at the Future *Urban Legacy* Lab (through DIST) and at the African Centre for Cities, at the University of Cape Town. His project addresses the impact of private Chinese finance on the transformation of African cities that lie on the 21st century Maritime Silk road.

Caterina Quaglio

is a doctoral student in "Architecture. History and Project" at the Politecnico di Torino. She graduated in architecture in Italy in 2015, spending two years abroad for exchange programs in Brussels and Madrid. Since her master thesis and during an internship in Chile, she has worked on the issue of public housing. Her PhD research is focused on the policies and practices of public housing urban regeneration, studied through in-depth analysis of three European case studies.

Maria Paola Repellino

graduated in Architecture in Politecnico di Torino and then obtained a PhD with a thesis on the dynamics of transformation of industrial heritage into creative places in Contemporary China. Since 2016 she is a post-doc researcher at the Polytechnic of Turin, where she coordinates a research in collaboration with Tsinghua University and EPFL dedicated to the Chinese new towns: within the program she curated the exhibition-seminar at the Beijing Design Week 2016 and the cycle of conferences on the new Chinese urbanization along the new Silk Road.

Giulia Sammartano

is architect and PhD in Geomatics. She cooperates with lab G4CH and F*UL*L. The research interests in geo-spatial science born in the Geomatics techniques for 3D documentation of Cultural Heritage by use of multiple digital approaches: 3D modelling by LiDAR, SLAM mapping, close-range and UAV photogrammetry, data analysis and GIS mapping. She is part of DIRECT Team Polito for emergency surveying, and 2016 Polito Task Force post-eartquake mission. She participates at PRIN 2015 and takes part in the Italian Archaeological Mission in Hierapolis of Phrygia in Turkey (2015, 2017, 2018).

PhD candidate

Silvia Cafora

is a Phd researcher at Politecnico of Turin where she is working on new radical approaches to collaborative housing. She studied Architecture between Milan (Politecnico) and Valparaiso in Chile. She early developed an interest in the right to the city, focusing on the abandon of public spaces in urban areas and their informal re-use by citizens. She led a research at PUCV Escuela de Arquitectura y Diseño in Valparaiso, Chile with the theme Obra Habitada, *housing from everyday life*, creating international symposiums in Paris (ENSCI), Santiago de Chile, Milan. She collaborates with Feltrinelli Foundation in Milan in the Housing research team. As a professional she worked at the first co-housing projects in Milan, and she is now part of Homers in Turin.

Matteo Gianotti

is a PhD researcher working on urbanization in developing countries. He studied architecture and urban planning at Politecnico di Torino, Università IUAV di Venezia and Chalmers University of Technology (Gothenburg). His Master's thesis focused on urban development strategies in response to climate change. He worked in the Urban Planning Unit at UN-Habitat (Nairobi) and with Subhash Mukerjee architectural design studio (Turin).

Elena Giudetti

is a PhD Candidate in Architecture, History and Project and a PhD fellow at F*UL*L. Her research focuses on the *transformative potential* in existing buildings. Until 2018, she was a freelance architect and a teaching assistant at UniFe, taking part in the organization of two international workshops in Sarajevo. During 2017 she worked in Zimoun Contemporary Art Studio in Bern. In 2017 she graduated at the Faculty of Architecture of Ferrara, with a thesis focused on adaptive reuse of a post-industrial site in Porto, in collaboration with the FAUP.

Chiara Iacovone

is an urban geographer with a background in architectural studies. She holds a BA at Roma Tre University and a MA at Politecnico di Torino both in Architecture; she graduated with a research thesis on the urban transformations in Berlin. She continued her career mostly oriented on urban studies, experimenting with different tools and media to investigate space. Her interests concern with questioning urban dynamics and looking at contemporary cities through different lenses. She has collaborated with art galleries across Europe with visual research projects. From November 2017, she became part of F*UL*L.

Francesco Milone

is an engineering and Management student at Politecnico di Torino. Interested in Economics, Strategy, Innovation and new Business Model Development. Worked as an assistant research scientist about economics and management field. The focus of this research is on "Platform business models". As case study, a particular attention is kept on Airbnb. In order to perform this analysis this research needs an important effort as data analytics due to the greater amount of data that have to analyzed,all results are elaborated in a simple visual way and in detailed reports.

Valerio Palma

holds a master's degree in Architecture and Urban Design from the University of Roma Tre (2016). He has been a research fellow at the ReLOAD Lab of the University of Padova (2016-2017), dealing with interoperable digital models for architectural cultural heritage. His work at F*UL*L focuses on the use of quantitative models and digital tools for urban design and the analysis of urban transformations.

Marco Rapelli

was born in Turin (Italy) on December 5th, 1992. He got his B.Sc. in Telecommunications Engineering (2015) and his M.Sc. in Computer And Communication Networks Engineering (2017) both at Politecnico di Torino. He then joined F*UL*L (Future *Urban Legacy* Lab), an inter-disciplinary center of Politecnico di Torino, where, in November 2018, he started his PhD under the supervision of Prof. Casetti. As main research interests, he is working on mobility studies and large-scale urban traffic simulators.

Ludovica Rolando

is an architect and PhD student in Architecture History and Design at Politecnico di Torino. She studied Architecture between Politecnico di Torino and UCL Université Catholique de Louvain. She collaborated with TeamMinus, Beijing (2016) and Miralles Tagliabue EMBT, Barcelona (2019/2020). She is now focusing on Contemporary Housing Models and she recently joined F*UL*L.

Agostino Strina

is an architect and a PhD Candidate in Urban and Regional Development at Politecnico di Torino. He holds a master's degree in Architecture for the Sustainability Design with a thesis focused on the internal areas of Sardinia, with the aim of rethinking some trajectories of regional development. His research deals with theories and cultures of contemporary urban design, with a particular focus on the relation between urban and rural, investigating the role of production landscapes and infrastructures. On these issues, since November 2020, he is conducting his research at F*UL*L. He is also member of Politecnico's research group China Room, as junior fellow, and teaching assistant in Urban Planning at Politecnico di Torino.

Roberta Taramino

is a M.sc in Engineering and Management at Politecnico di Torino.Her research grants to provide information to public institutes in order to improve the commercial system of cities. Understanding how consumers and close commercial environment react to a large-scale supermarket opening, using an innovative method to measure the impacts and studying the business model for the reuse of historical buildings in the urban landscape are two of the issues I've dealt with.

Valeria Todeschi

graduated in Regional, Urban and Landscape-Environment Planning at the Polytechnic of Turin in 2016, with a thesis on "Energy sustainability at the urban scale. Energy consumption models of buildings in Turin and potential development of the district network". She started a PhD in Energetics on F*UL*L project "Smart Energy Solutions for Sustainable Cities and Policies" at Polytechnic of Turin in 2018. The PhD aim is to drive smarter use of energy, matching it with the available energy renewable sources on the territory to help policy makers in defining effective policies adapted to the real energy-use.

Ilaria Tonti

is an architect and a PhD researcher working on reconstruction design tools post-earthquakes emergencies. She studied architecture between Piacenza (BA-Politecnico di Milano) and Turin (M.Sc. - Politecnico di Torino). Her Master's thesis focused on the regenerative value of residual urban spaces and adaptive strategies for Turin. During 2019, she followed the research "FARB 2016 - Learning from catastrophes: methods, tools and techniques for the realization of resilient settlement systems " of the Politecnico di Milano. With her PhD research, she became part of two Interdepartmental Centre of PoliTo: F*UL*L and PIC4SeR.

Past fellow

Didem Turk

is a city planner and PhD candidate in the Architecture History and Project at Politecnico di Torino. Her background is urban planning and urban design. She received her bachelor's degree in Middle East Technical University (METU) from the City and Regional Planning Department. She pursued her Master degree in Urban Design at METU in the context of post-conflict urban areas. In the meantime, she followed studio related to parametric design. She is currently conducting a research on comparative urban morphology at F*UL*L in collaboration of Transitional Morphologies Research Unit. Her field of interest is urban morphology, comparative urban morphology studies, and parametric design.

Alberto Valz Gris

works as a geographer. He holds an M.Sc. In Architecture (Politecnico di Torino) and an MA in Fine Arts (Sandberg Instituut, Amsterdam). Combining theoretical reflection and on-field research into textual contributions and audiovisual productions, his work aims at transforming the relationship that humans entertain with the surrounding biosphere.

Emilio Abbate PhD candidate

cooperates with lab G4CH-Laboratory of Geomatics for Cultural Heritage at PoliTo and F*UL*L-Future *Urban Legacy* Lab. He researches tools and survey methods for identify and implement HBIM model applied on Cultural Heritage, for monitoring, conservation, restoration and Finite Element Analysis (FEM). His interests are focused on the generation of BIM models from Point Clouds: modelling BIM from laser data and photogrammetric using object-oriented parameterization.

Louis Andrianaivo Research fellow

is a *research fellow* from the department of Computer Science of Polytechnic University of Turin. He has graduated from the department of Mathematics, University of Roma Tre. His topic is the application of parallel programming in cryptography, statistical simulation and machine learning. Currently, his main contribution with Future *Urban Legacy* Lab is the use of machine learning algorithms in the field of Architecture and Urban design. He is working under the supervision of Professor Claudio Casetti.

Michele Barale PhD candidate

is a journalist and a PhD candidate in Architecture, History and Design. He graduated in Architecture at Polytechnic of Torino, with a master thesis concerning typo-morphology research developed at Forma Urbis Lab in Lisboa (FAUL). Since may 2018 he is editor of In_bo journal (University of Bologna). Active in dissemination of local, architectural and urban culture, he worked as journalist and he is member of local organisations.

Natalia Bonilla Research fellow

finished her major in Architecture at the Universidad de Costa Rica, Natalia gained experience for two years in design and construction as a junior architect in the San José based firm Grupo Térraba. In 2015, she undertook the masters joint programme PLANET Europe, part of Erasmus+, between Radboud Universiteit (Netherlands) and Cardiff University (United Kingdom) in European Spatial Planning and Environmental Policies.

Caterina Montipò PhD candidate

is an architect and PhD She graduated from Politecnico di Milano in 2013, and earned her PhD from Politecnico di Torino in 2019 with the thesis "Loft Working. Urban manufacturing spaces in North American cities." She has a rich and diversified international experience developed both as a student as well as a professional between Spain (Universitat Politècnica de València), Chile (Pontificia Universidad Católica de Chile), and USA (Carnegie Mellon University). She has been collaborating with different architectural studios and engineering companies between Chile (2013-2014) and Italy (2015-current).

Maicol Negrello Research fellow

is an architect and research fellow at F*UL*L and DAD (Politecnico di Torino). Graduated in Architecture after two international experiences at TTÜ Tallinn and at the CCA (Montréal), he holds a PhD at Politecnico di Torino with the thesis "Architecture for urban agriculture". He is currently involved in studying the different forms of integration of nature in the city in the research NUI- Nature as Urban Industry.

Emanuele Protti PhD candidate

is an architect and PhD student in Architecture History and Design at Politecnico di Torino. He collaborated with Carlo Ratti Associati, Plateau Collaboratif, UdA Marcante-Testa. In 2016, he won in collaboration with Plateau Collaboratif the international competition for the redevelopment of the industrial sector Pasubio in Parma. He lives and works in Turin.

Elisa Sirombo Research fellow

architect, leed ap bd c, o m, itaca protocol expert Since 2011 he has been a consultant on energy-environmental sustainability issues and on the LEED and Itaca certification processes and since 2014 he has been collaborating with Macro Design Studio. Since 2013 research fellow at the Department of Energy of the Polytechnic of Turin, he carries out research in the field of sustainable construction. Author of several technical and scientific publications.

COLOPHON

The Future *Urban Legacy* Lab
A report. 2017–2021

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FIONDA:
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Typefaces
Akzidenz–Grotesk pro
Adobe Caslon Pro

Paper
Fedrigoni Arena EW Smooth
Fedrigoni Imitlin Flat

ISBN
978–88–85745–69–8

Printed and binded in Italy by
Arti grafiche Parini

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Thanks to
Mario Ravera, *Head of PPA*
Annita Dei Tos, *Interdepartimental Centres Supervisor*
Graziella Mauro, *Assistant to the Supervisor*