

SpringerBriefs in Applied Sciences and Technology
PoliMI SpringerBriefs

Stefano Capolongo · Monica Botta · Andrea Rebecchi
Editors

Therapeutic Landscape Design

Methods, Design
Strategies and New
Scientific Approaches



POLITECNICO
MILANO 1863



Springer

SpringerBriefs in Applied Sciences and Technology

PoliMI SpringerBriefs

Series Editors

Barbara Pernici, Politecnico di Milano, Milano, Italy

Stefano Della Torre, Politecnico di Milano, Milano, Italy

Bianca M. Colosimo, Politecnico di Milano, Milano, Italy

Tiziano Faravelli, Politecnico di Milano, Milano, Italy

Roberto Paolucci, Politecnico di Milano, Milano, Italy

Silvia Piardi, Politecnico di Milano, Milano, Italy

Springer, in cooperation with Politecnico di Milano, publishes the PoliMI Springer-Briefs, concise summaries of cutting-edge research and practical applications across a wide spectrum of fields. Featuring compact volumes of 50 to 125 (150 as a maximum) pages, the series covers a range of contents from professional to academic in the following research areas carried out at Politecnico:

- Aerospace Engineering
- Bioengineering
- Electrical Engineering
- Energy and Nuclear Science and Technology
- Environmental and Infrastructure Engineering
- Industrial Chemistry and Chemical Engineering
- Information Technology
- Management, Economics and Industrial Engineering
- Materials Engineering
- Mathematical Models and Methods in Engineering
- Mechanical Engineering
- Structural Seismic and Geotechnical Engineering
- Built Environment and Construction Engineering
- Physics
- Design and Technologies
- Urban Planning, Design, and Policy

Stefano Capolongo · Monica Botta ·
Andrea Rebecchi
Editors

Therapeutic Landscape Design

Methods, Design Strategies and New
Scientific Approaches

Editors

Stefano Capolongo
Department of Architecture, Built
Environment and Construction Engineering
(ABC)
Politecnico di Milano
Milan, Italy

Monica Botta
Landscape Architect
Bellinzago Novarese (NO), Italy

Andrea Rebecchi
Department of Architecture, Built
Environment and Construction Engineering
(ABC)
Politecnico di Milano
Milan, Italy

ISSN 2191-530X ISSN 2191-5318 (electronic)
SpringerBriefs in Applied Sciences and Technology
ISSN 2282-2577 ISSN 2282-2585 (electronic)
PoliMI SpringerBriefs
ISBN 978-3-031-09438-5 ISBN 978-3-031-09439-2 (eBook)
<https://doi.org/10.1007/978-3-031-09439-2>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2023

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors, and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Foreword

After decades of viewing the outdoor space of a healthcare facility as an unimportant addition to the building, the therapeutic significance of these spaces is becoming more and more clear. Design practice and user research is increasingly demonstrating that outdoor spaces in cities and the garden spaces of healthcare facilities can have a significant effect on people's health. In many nations of the developed world, an increasing proportion of older people are developing symptoms of Alzheimer's disease and other forms of dementia. It is laudable that in this volume several chapters focus on designing for this particular patient group, for whom specific design elements can provide a prosthetic environment, thus ensuring peoples' dignity and safety, and alleviating the concerns of the staff.

Children, like people with disabilities and the elderly, are particularly vulnerable to a mismatch between their needs and the design of the physical environment. Italy has experienced an alarming reduction in the proportion of children allowed to travel to school on their own, or to enjoy what has become known as a "free range childhood" in the city. It is particularly important that this concern is being documented and hopefully brought to the attention of city planners and politicians. Children deprived of experiencing a reasonable sense of independence at an early age may have trouble expressing themselves as fully creative adults in later years.

There are many ways of establishing a healthy relationship between human beings and the natural environment. One of these is through horticultural therapy, where benefits for those with physical or mental health problems can be facilitated through the simple act of gardening. Nurturing a plant that needs to be taken care, learning about the value of compost, experiencing a sense of time standing still—all of which can occur in the garden—bring benefits to a patient which may not be possible through medication alone. The design of spaces for horticultural therapy and the inclusion of relevant vegetation require the collaboration of those trained to work with patients together with botanists and ecologists.

In situations where outdoor space is not possible, and the practice of horticultural therapy is not feasible, natural elements can be brought into the environment through biophilic design. Such elements in a building might include views to greenery, indoor plants, adequate daylight to enhance circadian rhythms, nature-related artwork, and

architectural design details. Close collaboration must be established between architects, landscape architects, and interior designers to ensure the best possible solutions and outcomes of biophilic design.

Overall, this volume presents a significant collection of research findings and relevant design directives. The design of buildings and outdoor spaces undoubtedly affect the day-to-day lives and health of those who use them. The publication of this important book presents research-grounded information that will enable readers to influence, design, and build environments beneficial to those who live, work or play in them.

Clare Cooper Marcus
Professor Emerita
Departments of Architecture
and Landscape Architecture
University of California
Berkeley, USA

Preface

The health status—as considered today—is not just an individual protection and promotion issue, but a collective condition, strongly influenced by the environmental context; the link between the morphological and functional features of urban contexts and places, and the Public Health outcomes, opening up to a new scientific and design scenario about Urban Health research topic.

Referring to this research field, the introduction of Nature-Based Solutions and Therapeutic Landscape Design approaches into the healthcare contexts, facilities, and architectures has assumed a considerable importance over the years. The recent period that saw the healthcare facilities fighting against the COVID-19 pandemic, highlighted the need, especially in complex periods of lockdown, to use green spaces to recover health and well-being both in hospitals and in public or private places. The COVID-19 pandemic is an important demonstration of the dual effects of urbanization on the environment, that is, the intrinsic capacity of the contemporary city to be a place of economic and social opportunities and, at the same time, places where multiple risk factors for Public Health and Health Welfare could be developed and disseminated.

Starting from the experience developed into the six editions of the Training Course in “Therapeutic Landscape Design”—which has been held since 2015 at the Department of Architecture, Built environment and Construction engineering (ABC) of Politecnico di Milano, where the multidisciplinary approach of the Lectures involved helps to provide scientific, technical, healthcare, social and design methodologies to over 120 attendees—the need to bring together, in a scientific monograph, the contribution of the Professors, Professions, and Practitioners, became crucial as much as relevant.

A more conscious design of therapeutic green spaces—especially referred to the Healing Gardens—can give texture and consistency to several unique elements in the treatment of specific pathologies, to support social discomfort, to develop healing processes and practices, and to improve the evolution of healthy lifestyle and accessible built environment for fragile users and people with disabilities.

This collection of insights and scientific experiences aims to provide the tools to plan and create therapeutic places and natural spaces aimed to support the care process, as well as giving an overview of national and international case studies, defining design approaches, analysis, and best practices.

Milan, Italy

Stefano Capolongo
Monica Botta
Andrea Rebecchi

Contents

Urban Health: Applying Therapeutic Landscape Design. Methods, Design Strategies and New Scientific Approaches	1
Gayle Souter-Brown	
Biophilic Design: Nine Ways to Enhance Physical and Psychological Health and Wellbeing in Our Built Environments	13
Bettina Bolten and Giuseppe Barbiero	
Growing the Seeds of Well-Being in the Garden	21
Alessandra Chermaz	
Design of Natural Places for Care: Strategies and Case Studies	33
Monica Botta	
Therapeutic Architecture. Assessment Tools and Design Strategies for Healing Gardens Implementation	47
Andrea Rebecchi, Andrea Brambilla, Monica Botta, Angela Casino, Sara Basta, and Stefano Capolongo	
Approaches to Post-Occupancy Evaluation and Wellbeing in Designed Space	57
Paolo Costa and Leonardo Chiesi	
A “Prosthetic Environment” for Individuals with Dementia	69
Antonio Guaita	
Light, Circadian Rhythms and Health	81
Roberto Manfredini, Rosaria Cappadona, Ruana Tiseo, Isabella Bagnaresi, and Fabio Fabbian	
Green Spaces and Public Health in Urban Contexts	93
Andrea Lauria	

Active Cities & Health: A Children Perspective	101
Antonio Borgogni and Elena Dorato	
Design for All: Strategy to Achieve Inclusive and Healthier Environments	113
Erica Isa Mosca	

Urban Health: Applying Therapeutic Landscape Design. Methods, Design Strategies and New Scientific Approaches



Gayle Souter-Brown

1 Research Outlook

Recent increased urbanisation and urban densification, coupled with corporate agriculture and horticulture, have changed the environment. Concurrently, digital lifestyles have disconnected people from nature. Stress levels are rising. Cities are increasingly impermeable, new developments often lack private gardens and public parks are shrinking. Young and old people spend less time outside as there is little to attract them outdoors. Although overwhelming evidence links positive outcomes for health and well-being with the stress reducing properties of the environment, a dose of nature, through views and time spent outdoors, is increasingly difficult to find. New research seeks to integrate theory and practice.

Therapeutic landscapes have been a feature of human settlement since ancient times. Intentionally richly planted, they offer serenity, contact with nature, space and a sense of refuge. Contemporary therapeutic landscapes are generally developed as gardens, on a human scale.

2 Why Do Towns and Cities Need Therapeutic Landscapes?

The health and wellbeing of people and planet is intimately linked. As urbanization increases, so environmental pressures and human stress levels increase. Rising chronic stress levels across towns and cities affect community vitality. To ease the effect of these pressures, a new balance must be sought whereby the therapeutic properties of landscapes are prioritized within urban planning and design. Human scale landscapes are at the heart of healthy cities.

G. Souter-Brown (✉)
Auckland University of Technology, Auckland, New Zealand
e-mail: gayle@greenstonedesign.co.uk

Historically, urban health was supplied with biodiverse tree-filled public parks and gardens providing clean air and somewhere to take gentle exercise. With reduced public budgets and an ongoing housing crisis many of these former ‘lungs’ of the city have been sold off to developers or neglected.

The recent global Covid-19 pandemic places new attention on health promotion as vital to ensure health systems are not overwhelmed. The protective nature of reduced stress and enhanced community wellbeing must be recognised in design research and practice. Therapeutic landscapes, supplied as a network across all parts of our towns and cities, address a need for mental health support, reducing stress to prompt and enable healthy lifestyles. Protecting existing greenspace, promoting new therapeutic landscapes and enhancing the health-giving qualities of urban nature will not only aid human health, but address issues around climate change, biodiversity loss, and aid economic recovery.

3 Evidence Base

The evidence base for the efficacy of therapeutic landscapes is significant [4–10]. Interest from mental and physical health, landscape and urban design professionals is growing, alongside diverse groups such as sociologists, urban foresters, housing providers and policy makers [11, 12].

3.1 *Biophilia*

E.O Wilson’s theory of biophilia [1], our innate love of living things, is fast becoming a key instrument in fashioning functional urban design. Taking an evolutionary approach, Wilson found that humans are wired to respond positively to nature contact.

3.2 *Attention Restoration Theory*

Kaplan’s Attention Restoration Theory [2] takes the biophilia hypothesis further and posits that time spent in nature is protective; it promotes and enhances health and well-being.

3.3 *Salutogenesis*

A shift towards a focus on health promotion and prevention of illness is captured by Aaron Anonovsky’s term salutogenesis [3]. Salutogenesis offers an alternative