

Pierluigi Salvadeo
Architect and PhD, is a Full Professor of Interior Architecture at the AUIC School, Politecnico di Milano. Coordinator of the Masters Degree Program in Architecture and of the Xi'an Jiaotong-Polimi Double Degree. Author of several publications with national and international publishers. In 2018, he won the "Compasso d'Oro" Award.

Andrea Tartaglia
Architect and PhD, is a Full professor of Technological and Environmental Design of Architecture at the Department of Humanities, Università di Catania. He conducts research and design activities within complex scenarios focusing on architectural design and its socio-environmental, procedural, and regulatory implications.

Architecture is a discipline in which either the technical or the artistic dimension may prevail, yet one element remains essential: the tangibility and physical presence of its outcomes. The material that gives substance and meaning to a design vision is an integral part of the project itself and, in some cases, may even become its generative principle. This is precisely the challenge addressed in this book created to highlight the richness of the reflections, contents, and projects that emerged from the convergence of production, research, and education. The theoretical essays are complemented by the presentation of nine design proposals resulting from discussions between researchers and students of the School of Architecture Urban Planning Construction Engineering at the Politecnico di Milano and the company AGGLOTECH.



Edited by
P. Salvadeo, A. Tartaglia

Materials and Architectural Design

Edited by
**Pierluigi Salvadeo
Andrea Tartaglia**

Materials and Architectural Design

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Edited by
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Andrea Tartaglia

Materials and **Architectural** **Design**

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Foreword

*Pierluigi Salvadeo,
Andrea Tartaglia*

Architecture is a discipline in which either the technical or the artistic dimension may prevail, yet one element remains essential: the tangibility and physical presence of its outcomes. The material that gives substance and meaning to a design vision is an integral part of the project itself and, in some cases, may even become its generative principle. This is precisely the challenge addressed in this book.

The starting point is a modern and innovative material which, as clearly explained in Alessandro Ubertazzi's essay, originates from a millennia-old tradition dating back to Roman times, anticipating contemporary themes such as circular economy and reuse. Over the centuries, this material has undergone continuous aesthetic and technical evolution. Today, research continues to expand into new areas and to follow increasingly complex trajectories, as expertly described in Santi Centineo's contribution. These are the paths explored by the nine projects presented here, which also pursued the objective of offering the young participants an experience of cultural and professional growth. This goal is grounded in the well-founded conviction, reiterated in Fabrizio Schiaffonati's essay, that only direct engagement with the concreteness

of reality and with issues of feasibility can generate true learning. Indeed, the relationship between production, research, and education today calls for new models and synergies capable of fostering what Andrea Campioli defines as a "collaborative ecosystem," one that brings together theoretical knowledge, technical expertise, production capacity, and social needs. Through its texts and images, this book documents a significant moment of dialogue and exchange between the worlds of production (AGGLOTECH) and research and education (the AUIC School at Politecnico di Milano). This encounter also gained broad visibility through participation in Milan Design Week 2024. The book was therefore conceived to preserve the legacy and richness of the reflections, contents, and projects that emerged from this convergence of production, research, and education. These projects were also realized as full-scale prototypes, demonstrating how the exploration of the "true nature of materials" remains an inexhaustible source of opportunity and innovation.

Milan, July 2025

UNONESSUNOCENTOMILA/ ONENONEAHUNDREDTHOUSAND

*Pierluigi Salvadeo,
Andrea Tartaglia*

—

Politecnico di Milano
School of Architecture Urban Planning
Construction Engineering
Department DASTU

Università di Catania
Department DISUM

The dynamism of contemporary human societies, marked by the continuous evolution of shared sensibilities, material culture, and relational patterns, compels designers to question the motivations underlying design and the meaning of the tools it employs. Certainly, even within an increasingly ephemeral and immaterial society, the role of the physical and the tangible cannot be underestimated. Materials represent a fundamental medium through which our understanding of our surroundings is constructed. In this regard, Peter Rice stated that, in order to use a material, one must thoroughly understand its true nature (Rice 1984), a nature that can also be described through the perceptions conveyed by the cultural and historical filters that characterize a society.

From this perspective, the project itself may become both an opportunity and a journey, useful for discovering the “true nature” of a material in order to better understand and enhance it. To do so, however, it is necessary to eliminate, as much as possible, the superstructures that may influence this understanding, addressing them individually. Form is certainly a significant superstructure, which in some cases may arise from the mechanical characteristics of the material employed, or in other cases from a close relationship with the function for which the design is intended. At times, however, form becomes an independent variable, appropriating the physical element that defines it for reasons of mere expediency.

Another relevant case is undoubtedly that of scale, understood as dimension, which, while keeping form and material unchanged, can significantly alter the perception of an artifact. Purely by way of example, Peter Eisenman’s (1999) studies on “scaling,” or rather “scale shifting,” clearly illustrate how a project establishes different relationships with its context, or even solely with its own internal compositional logic.

These considerations concern what may be defined as the “endogenous” aspects of the project, namely those that design can directly govern from within. Alongside these, there are other aspects, which we might instead define as “exogenous,” to which the project must necessarily respond, even though they remain external to it. Among these is certainly the project’s ability to coherently align with the requirements of use that, for various reasons, are imposed from outside. As already mentioned, these requirements are largely the result of cultural and contextual conditions that characterize different societies, the ways in which individuals live and relate to one another, in short, their ways of living.

It is from these initial considerations that our project set out to explore and outline the theme of domesticity as an indispensable condition of living. A form of domesticity that has undergone profound change in recent times, both in relation to everyday actions and in our perception of reality. We speak, therefore, of a domesticity that is simultaneously “invaded” and “invasive.” It is “invaded” because activities that once took place outside the home, in the city or across the territory, have now entered the most intimate spaces of the domestic interior. It is “invasive” because modes of living that were once jealously guarded within the privacy of the home are now progressively migrating outward, permeating every space and every place.

Technology, and digital technology in particular, plays a crucial role in this process. It enables us to carry extensions of the home with us and to dwell wherever it becomes necessary or desirable to do so. Smartphones of various kinds and increasingly high-performance tablets allow for the continuous appropriation of the spaces through which we move, enabling us to inhabit them freely, whether on a permanent or temporary basis. Our actions today consist of a continuous overlap of situations of different natures, taking place indifferently in spaces that may be radically different from one another, inside or outside the domestic sphere. What emerges is an inhabited whole, expressed through a heterogeneous landscape that is always traversable and organized as a continuous system (La Rocca 2010).

This composite reality is one in which different abstractions relate to one another without dominant hierarchies, generating a multitude of styles and forms, uses and places, environments and technologies, services and information, languages and images, scenes, brands, advertisements, and economic systems. Contemporary inhabited space thus ceases to be defined solely as architectural space and becomes instead a complex structure of use, in which residential, productive, service-related, and other functions are freely distributed across a uniform and continuous plane.

This horizontal redistribution of uses does not represent a flattening of the experience of living. On the contrary, the ways in which we

imagine and carry out even the simplest everyday actions are becoming increasingly sophisticated and can be performed almost anywhere. This constitutes a subversion of traditional modes of living, increasingly expansive and open, increasingly heterogeneous and inclusive. It transforms our gestures, the sequence of our daily actions, the way we relate to objects and people, and the quality of the spaces in which we live or would like to live. It also transforms our idea of experience: what appeared new until recently has now become habitual.

It often seems that the reality of what can be done exceeds the imagination of what is conceived, with technology acting as an accomplice. Yet there is little doubt that the most profound revolution today is behavioural, rooted more in the cultural and personal spheres of individuals than in technology itself. The impression that this new mentality is merely the result of a technological or informational revolution is gradually dissolving, just as the sense of wonder once generated by technological innovation has faded. What now prevails is the feeling of having crossed a threshold, of beginning to explore areas of ourselves that had previously remained uncharted. In short, the impression is that we have acquired a different cultural and civic attitude (Baricco 2018).

All this suggests that inhabited space is now identified more with the actions that take place within it than with architecture understood as the primary reference framework. Space erodes in favour of new territories of occupation, often difficult to describe using the classical formal codes of architecture and not always immediately comprehensible or universally shared, yet endowed with a strong dynamic, performative, and inventive capacity. As a result, the boundaries within which architectural design traditionally operates become increasingly blurred, and multiple disciplines, in addition to architecture, contribute to the definition of new spatialities. By overlapping with one another, these disciplines extend their influence beyond their respective domains.

The figurative dimension of architecture also changes, as the linear correspondence between form and function, or, more precisely, between “figure” and “use”, is lost, with these elements now unfolding along different and non-parallel trajectories. Yet it is precisely this independence of use from form that often generates architectures and spaces whose figurative character appears even more pronounced, as if architecture were asserting its own representational autonomy, governed by internal laws and capable of generating its own contexts and geographies.

Space thus becomes more fluid and less defined by perimeters, a process that also involves the material dimension of artifacts, which increasingly tends toward dissolution. Materials reveal unexpected qualities in their chromatic characteristics, textures, and sensory

exchanges with the human body, in terms of heat and cold, hardness and softness. The overall impression is one of greater freedom, or perhaps more accurately of fewer constraints, in classifying space and its derivatives within established categories. Typological classifications lose relevance, and space is more readily identified through the “conditions of use” that develop within it, conditions that can change rapidly, altering even the logical sequence by which spaces are positioned in relation to one another.

Objects and actions fade into one another, and it often seems less interesting, and even unnecessary, to follow the traditional sequence that moves from the urban scale to the building, then to interiors and objects. This shift also produces a different perception of the environment as a whole, now regarded as one of the central concerns of contemporary society. What emerges is an ecological and systemic vision in which relationships between different components are continuously reconfigured. New connections of meaning profoundly transform humanity’s relationship with space, consequently changing the way we perceive and classify each place. While physical distinctions between spaces, such as between the warmth of the dwelling and the cold exterior of the city, clearly persist, these divisions are increasingly instrumental, tied to utilitarian considerations for which alternative solutions are now available.

Starting from these premises, our project investigates the “true nature” of Terrazzo, a concrete conglomerate produced by AGGLO-TECH, by experimenting with its expressive, tactile, and functional potential. We began with a simple and essential form, not immediately associated with specific uses, obtained by sectioning cylindrical blocks of different diameters along a curved surface. The result consists of concave and convex discs, conceived as neutral objects capable of responding to an almost infinite range of possible uses. These uses depend on size, thickness, texture, and colour, but above all on the context to which the object belongs and on the imaginative capacity of the user, a variable of fundamental importance in fully activating the meaning of the object.

Each disc, tray, or other designation one may attribute to it, whose only indisputable characteristic lies in the pure material from which it is made, liberates itself from labels and functional connotations suggested by its simple form. Its expressiveness unfolds according to dimensions, scenarios, and contexts. Countless figurative and expressive variations may be assumed by this simple artifact, derived from the combinations of dimensions, colours, and textures defined by the aggregates employed: stone fragments of different sizes, crumbled within the mixture, generate chromatic compositions; filigree patterns emerging on polished surfaces evoke woven brocades and textiles; tonal transitions between different textures suggest symphonies of stone.

Each figurative configuration may then be associated with a use. Diverse functional solutions emerge, capable of serving indoor and outdoor environments, private and public spaces, autonomously and independently of any predetermined scheme or pattern.

UNONESSUNOCENTOMILA/ONENONEAHUNDREDTHOUSAND may function as a small multipurpose tray for everyday use, or as a piece of furniture intended simply to be displayed within a domestic or other environment.

UNONESSUNOCENTOMILA/ONENONEAHUNDREDTHOUSAND, when reproduced at a larger scale and placed alongside cushions, upholstery, or fabrics, becomes a convex surface for resting, sitting, or reclining, suitable for stations, airports, hotel lobbies, or other public spaces.

UNONESSUNOCENTOMILA/ONENONEAHUNDREDTHOUSAND may serve as a newspaper holder for a waiting room or a domestic living area, yet when filled with soil it becomes a planter for flowers or plants, adaptable in scale from the home to the urban street or public square.

UNONESSUNOCENTOMILA/ONENONEAHUNDREDTHOUSAND, with the addition of hands and a suitable mechanism, becomes a clock, to be hung on a wall or placed on shelves or tables, indoors or outdoors.

UNONESSUNOCENTOMILA/ONENONEAHUNDREDTHOUSAND reduced to the scale of a tile and reproduced in series, it generates a vibrant wall covering, using uniform colours or contrasting combinations of textures and tones. It may also function as an ornament, a board game such as checkers, or as a traditional chopstick rest, known as *kuàizhěn* in China, *sujeobatchim* in Korea, and *hashioki* in Japan.

UNONESSUNOCENTOMILA/ONENONEAHUNDREDTHOUSAND may coexist with water, becoming a fountain for a public square or a sink for a domestic interior.

The list of possible uses can, as one might imagine, extend indefinitely, and indeed it must do so. Yet the designer must also know when to stop designing, in order to allow others, users, observers, inhabitants, to continue imagining. This is the reason behind the project's name: UNONESSUNOCENTOMILA/ONENONEAHUNDREDTHOUSAND, inspired by Luigi Pirandello's novel of the same name, whose protagonist, Vitangelo Moscarda, continually addresses the reader by posing questions and dilemmas, directly involving them in the narrative.

The same involvement and awareness are what we envision in the practices of "appropriation" and "re-appropriation" that may guide the future development of this project, which begins with a few and aspires to belong to everyone. It is an "unfinished" work, perpetually

open to new proposals, whose final form will emerge through spontaneous processes of evaluation and experimentation, aimed at shaping the spaces and places in which we live and act. This was also the path followed by Vitangelo Moscarda, initially awkward and imprisoned by the opinions of others, yet increasingly determined to seek the spiritual authenticity of his own existence.

Similarly, in UNONESSUNOCENTOMILA/ONENONEAHUNDREDTHOUSAND the only possible truth lies in a form of “essence”: an expression of matter alone, shaped into a pure, essential, and balanced form, whose uses open onto countless contexts and “a hundred thousand” dimensions, colours, and textures, as well as the many individual trajectories of use that each person may invent. This is the ultimate aim of the project: the pursuit of a multi-textual expression, an outcome of contemporary complexity and its productive chaos, composed of layered, multilevel, and performative content. An endless beginning in which the user becomes an active participant, attributing new meanings, values, and uses to a material, AGGLOTECH, that is itself composed of a multitude of other materials, here resolved into pure form with infinite measures and infinite uses, while remaining, in essence, always and immutably the same.

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Pierluigi Salvadeo, Andrea Tartaglia

Erika Ferrari, Marco Rampazzo, Gaia Uslenghi, Sofia Vrenoza

The project investigates the use, expressive and tactile potentialities of the concrete conglomerate by AGGLOTECH, proposing a unique, simple and essential product obtained by sectioning cylindrical blocks of different diameters according to a curved plane. The result is concave and convex discs, like multi-coloured trays capable of responding to countless possible uses depending on the size, thickness, texture and colour, but above all depending on the context to which they belong. Each disc, or tray, freeing itself from the original use that its unmistakable primary form might suggest, freely expresses its own relationships with the world of architecture and more generally with art. Fragments of crumbled stones within the mixture describe mixtures

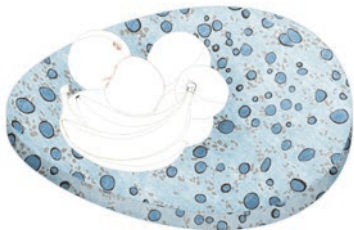
of different colours; filigrees that emerge on the variously smoothed external surfaces are expressed as weavings of brocades and fabrics; atonal passages between the different textures are perceived as symphonies of stone. Here then are the different functional solutions proposed that can serve the internal space as well as the external one, the private space as well as the public one.

ONENONEONEHUNDREDTHOUSAND declining with freedom and creativity it can be a small tray to store objects, or if reproduced in large size, a basin that accommodates cushions to sit or lie down; it can be used to grow plants and flowers, or as a table ashtray; it can become a clock to hang in the house and outside, but if applied in series it can represent a vibrant wall covering, and much more.



Concave or convex? A multipurpose primary shape.

So many scales, so many functions.



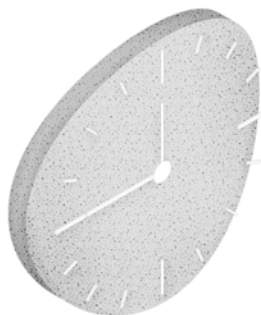
Fruit bowl.



Magazine rack.



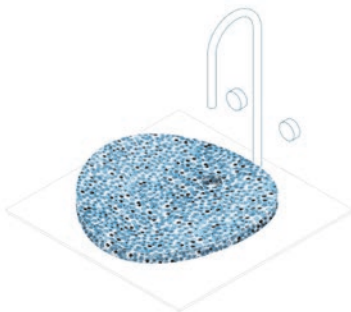
Lamp.



Clock.



Tiles.



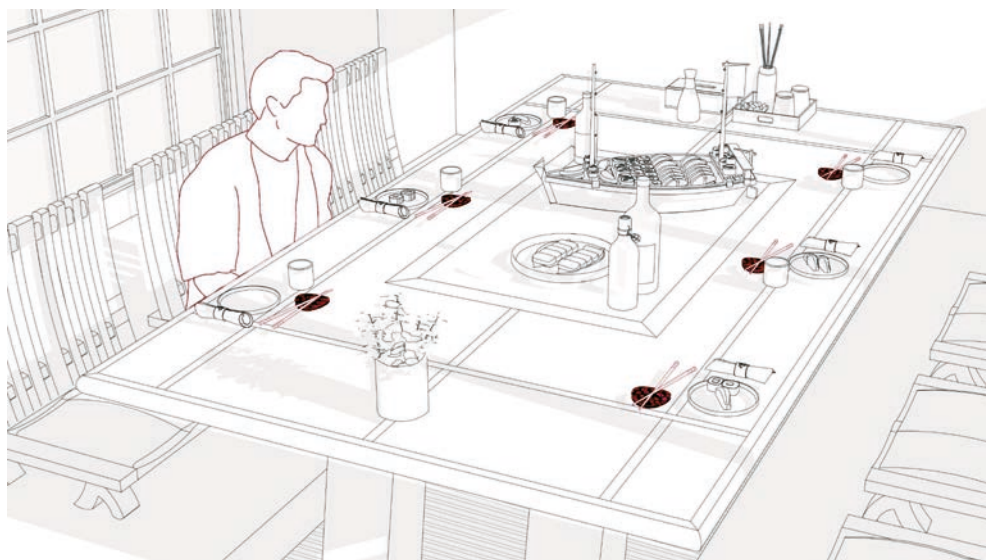
Washbasin.



Chaise longue.



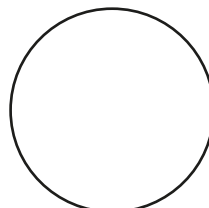
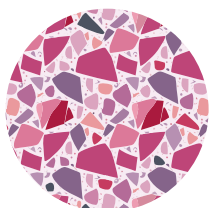
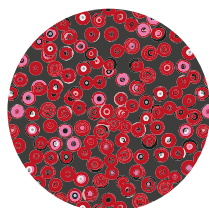
Chopstick rest.



Banquet.

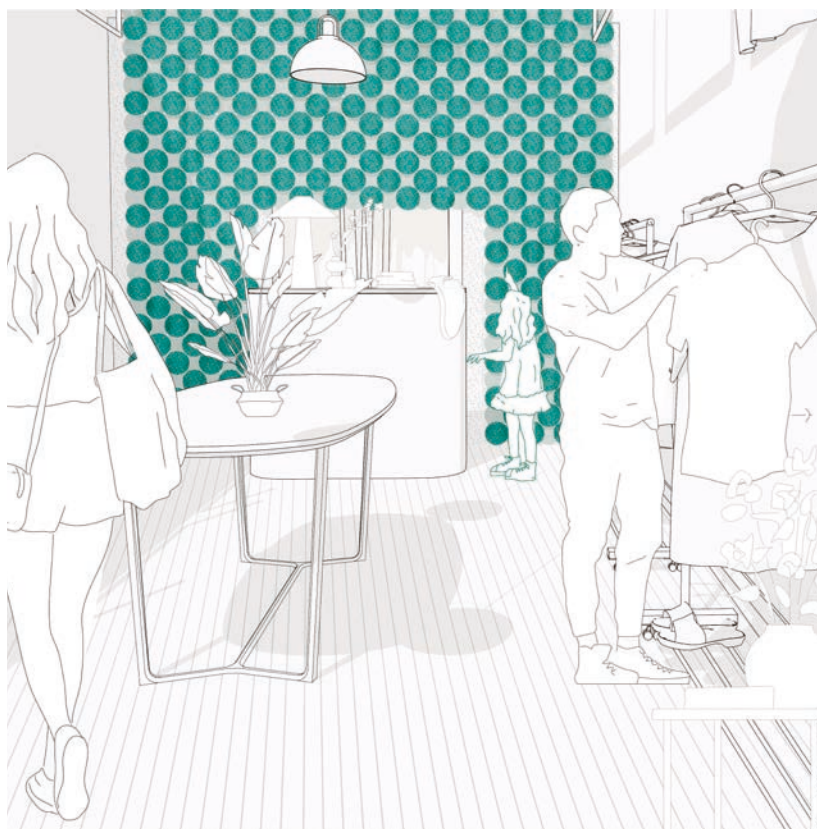


Everythingcarry





Hotsea.



Caressme.