

THE
POWER
OF
SUN

NEW MATERIALITY IN CONTEMPORARY
ARCHITECTURAL DESIGN

COMPAC
THE SURFACES COMPANY

ARKRIT

abstracts

THE
POWER
OF
SUN

NEW MATERIALITY IN CONTEMPORARY
ARCHITECTURAL DESIGN

COMPAC
THE SURFACES COMPANY

ARKRIT

Linked limit

The body and its materiality, symmetry, proportion, dynamic and static structure, its inside and outside constituted the architectural reference. The coexistence with the ruins of ancient Mediterranean architecture, whose stereotomy and courses deprived of covering offered themselves as a perfect paradigm, led to the first Italian Renaissance. But the social organization, systems and resources were already other ones, allowing to fasten on a raw substance extern and intern canvases that emulated that colossal architecture of stone, appearing the differentiation between the raw work and its final finishing the skin; its facade.

Gotfried Semper, gives this role of skin to the surface that covers the thick of the architectural and presents itself free, clean or covered up, highlighting or hiding the substance. The scientific error is clear, the skin is not a layer but a limit from the internal *fascies* to the outside, a consequence of intern growing.

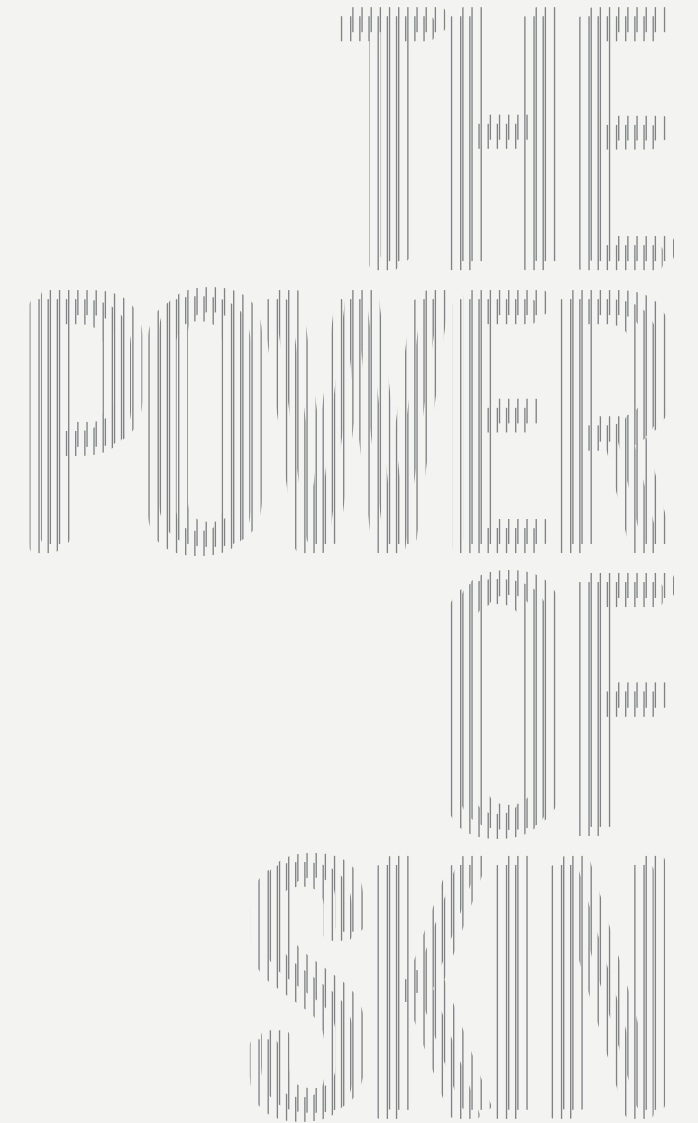
The romantic idea of architecture as a work of total art precipitated its future as propitious support of ornament, tattoos. Adolf Loos wrote his famous article in 1910, that we will no longer be able to forget or elude. The modern movement destroyed the facade. The skinned building. The tower of glass and steel its symbol. How beautiful are the buildings under construction today, air between columns and frameworks, organized, aligned and as these bones and muscles they are hidden with skins of toad, metamer rings, plates of perch, when they should be skins of princesses or horses. Better yet limit canvases linked to a particular building, which in turn is not unique, has a class, group, family and refers to them.

We must explain the linkage of the limit of our enclosures to their own content. Today the facade can be the most criminal ornament or the true field of research.



LUIS SEGUNDO ARANA SASTRE

Universidad Alfonso X El Sabio.
Politécnica Superior. Arquitectura. Madrid, España
arana_arquitectura@yahoo.es



**NEW MATERIALITY IN CONTEMPORARY
ARCHITECTURAL DESIGN**

Biomimetic for Building Skin Living

ENVELOPE FOR CONTEMPORARY ARCHITECTURE



NATASHA HEIL

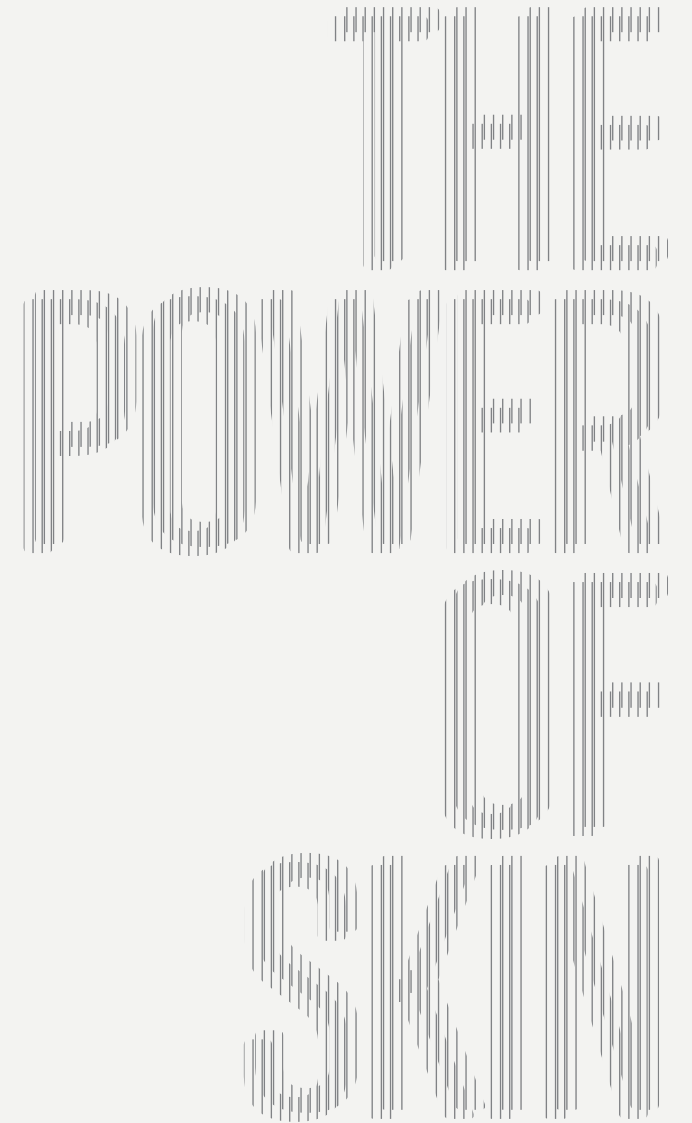
MAP-Maacc, CNRS-MCC UMR 3495, ENSA PARIS-La-Villette, Paris, France
natasha.heil@outlook.com

NELSON LARACUENTE MONTÀS

Universitat Internacional Catalunya, Architecture Dep., Barcelona, Spain, arq.
montas@gmail.com

As a highly interdisciplinary field, architecture is being influenced by many subjects of natural and social sciences. While many subjects hold an indisputable effect on architecture, biological sciences are currently dominating the current era. It is totally comprehensible for architects to observe and imitate the natural phenomena on behalf of a better living. This article will present how to translate the lessons learned from the analysis and observation of the animal world to design experience. Skin is a complex and incredibly sophisticated organ that performs various functions, including protection, sensation, insulation, temperature and water regulation. The skin interfaces with the environment and is the first line of defense from external factors. Similarly, building envelopes serve multiple roles and they are the interface between the building inhabitants and environmental elements.

In architecture, the boundaries between materials and structures are blurred the same way as in nature. The study of biological systems might be useful for our purposes on how new materials can be designed. The new material is inspired by the study of how animal skins perform and respond according to their different properties; they take into consideration various dynamic local environmental conditions, creating a more sustainable way of building hence living. The projects will be focused on specific functions that were unique to the selected animal's skin. The biology of an animal and the environment it lives in determine these functions. The processes by which each animal analysis will be carried out, will innovate in the design and conception of new materials. Which will, in turn, inform new synthetic designs based on biological systems that will describe new aspects and performance of the building envelope.



NEW MATERIALITY IN CONTEMPORARY
ARCHITECTURAL DESIGN

Savings energy of a double skin

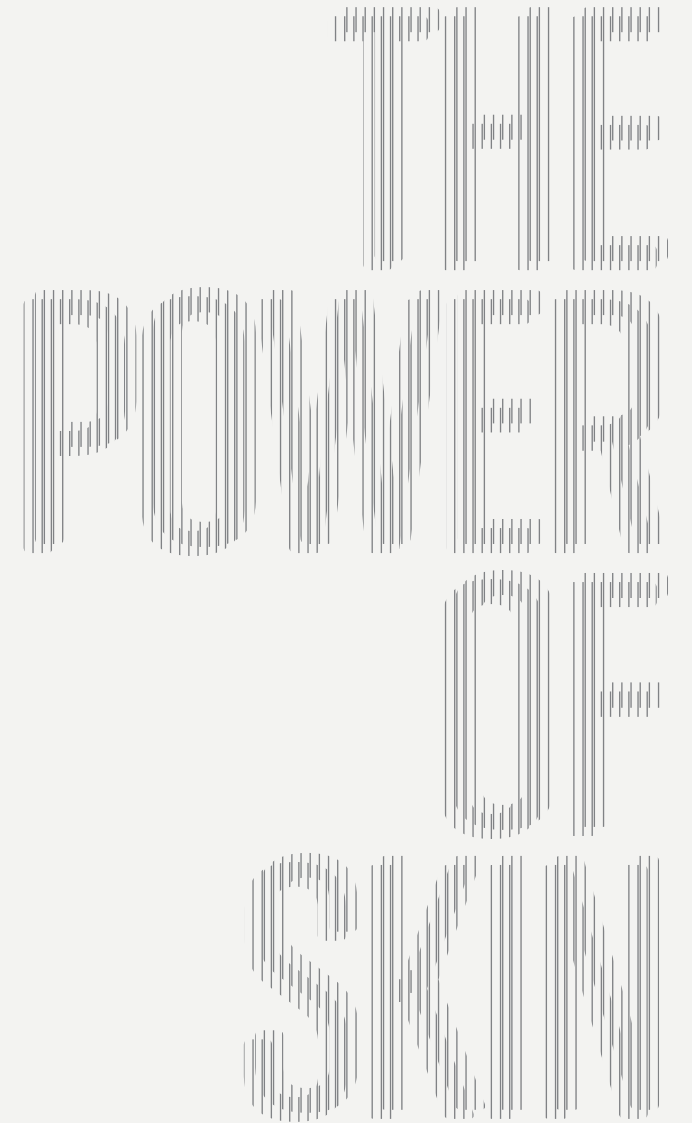


ÁNGELA MONJE PASCUAL
Madrid, España

Since the 1973 oil crisis, society is becoming aware that natural resources may deplete. The turn of the century must face new challenges that allow the economy to revive and environmental destruction to be curbed. The excessive energy consumption of large intelligent building is starting to be reconsidered through the recovery of some project strategies that allow a passive reduction in consumption.

A double envelope has significant advantages over a single enclosure. It facilitates cooling at night and protection from the sun during the summer, improves insulation against external noise and reduces wind's action in tall buildings. A review of the heavy exterior brise-soleil of concrete tested by Le Corbusier leads to more effective solutions consisting of light alloys that do not store heat and are separated from the enclosure, allowing the rise of heated air. Egor Eisemann solves it in Olivetti building in the seventies using a light metallic structure and a stretched canvas, while Francisco Javier Saenz de Oiza in BBVA protects the building from the west with colored absorbent glasses. Concrete, metals, tensioned fabrics and glasses are the most common envelope to protect the covering with a second skin. Ceramics bring lightness and visual permeability through more than proven lattices used in traditional Mediterranean architecture.

The consumption of energy and resources of the buildings should be considered from a global conception of the project that integrates the objectives into a single strategy and that provides buildings a long and flexible life, as well as the ability to adapt to different uses. A double layer improves the performance and aesthetic quality of an outdated building industry that remains in our cities and that needs to be recovered.



Ceramic Evaporative Cooling integrated in multilayer envelopes



MELERO TUR, SOFÍA

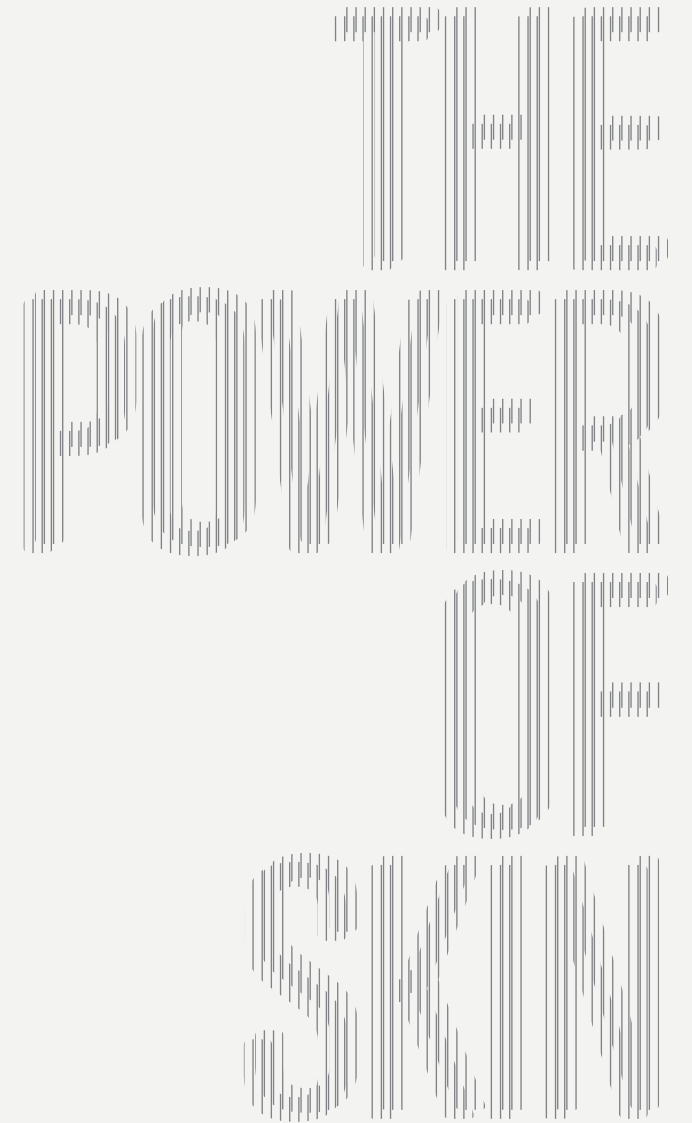
Department of Construction and Technology in Architecture
Technical University of Madrid, Spain
sofia.mtur@upm.es

Nowadays, there is a global need of change-direction in buildings energy consumption. Buildings envelope is crucial in building energy performance to minimize losses/gains. In warm climates with cold winters, insulation is not the best solution; buildings need dissipate heat coming from internal loads in summer period. This research is focused on evaporative cooling to reduce heat gains.

Evaporative cooling cools down air temperature by means of an adiabatic process, with no energy consumption. Porous ceramics is one of the best materials to behave as water container due to its capillary network; water evaporates through this network while its surface cools down.

The building's façade is also a fundamental part of the new building references. Façades is nowadays understood as an addition of functional layers, each layer has its technical or aesthetical function. Ceramics can have multiple roles according to this concept. This research draws attention to two qualities that ceramics have, versatility and good behavior as a cooling material, and integrates them into a common goal: to keep low the building's envelope temperature in warm climates.

A study collection and analysis of the systems that currently exist in which ceramic pieces are integrated with water in buildings envelopes has been performed. Most of the systems are experimental prototypes, only a few are built examples. This study includes a system's classification according to two criteria: the wetting method of the ceramics and the location of the cooling ceramic piece in the layers of the envelope.



NEW MATERIALITY IN CONTEMPORARY
ARCHITECTURAL DESIGN

Industrial poetic at building skin

SUPERFICIAL TRANSMUTATION



FORTEA NAVARRO, TERESA

UPM, Dpto. de Proyectos, ETSAM, Madrid, España
tfortea@telefonica.net

According to the theory of Gottfried Semper (1803-1879), the first architectural skins were textile, but they became masonry walls. From that construction of the masonry wall in the antiquity to the light contemporary architectural boundary, it has been necessary the technical and technological development in addition to several centuries.

The history of the matter, its transformation, is drawn beautifully in a stone or an archaeological remain. The qualities of the matter are revealed with the view of the surface. The matter gives information about the tinctures, pigments or mortars used in its production, it is a chronicle of the transformation process along the time. For example, the bright of a domestic object of the XVI century, express how it has been transformed and subjected to high temperatures in an oven, get cold and hot, making possible the formation of water purples that are perceptible to the sight.

In the contemporary architectural skin, a neutral, homogeneous, essential, invariable, intense and rigorous skin, with a small thickness, the materials that dress the boundary, veil the massive condition of the bearing wall. Indeed, vibrant surfaces, continuous with a light aspect, envelope the contemporary building boundary.

Two examples: the Lens Museum, Louvre [Kazuyo and Nishizawa & Sasaki, 2003] the reflectant materials project blurred images of the surroundings, fading the limits of the building. In the Vitra Campus, Germany [2012], a vitreous and whitish curtain hides the bearing condition of the concrete wall. In both cases the wall dematerialization happens, and its ornamentation takes place from an impressive abstraction.

In short, the technical and technological development achieves moving away the architecture from the beaux arts, adds the efforts of architectural and engineering work and reaches the category of industrial poetry, a poetry that mixes the aesthetic, the practical and the theoretical.



**NEW MATERIALITY IN CONTEMPORARY
ARCHITECTURAL DESIGN**

Skinless

Tirana is a city without skin, the extent nudity converges with the extension of the city, the streets and buildings. The skin as a tool, coverage, but mostly edge, is what limits the inside from the outside, lines the inside, cradles, protects him.

You fall in love of the skin, is the "rst thing that you want to touch, and it is the surface that we see more in people and here we are not talking about a building, but city. Not by chance that Prime Minister in one of is "rst performance called artists from everywhere to color buildings, while everyone was waiting infrastucture and much more important measures, in skin he saw the need.

Before treat the space, now indisputable, give a balm, cover or seal what is shown with so much harshness is a pryority to the city, it's not just a issue of technical detail. Not cover to close, but cover to protect, giving honor to those who have built, to its present occupant, to those who live the city.

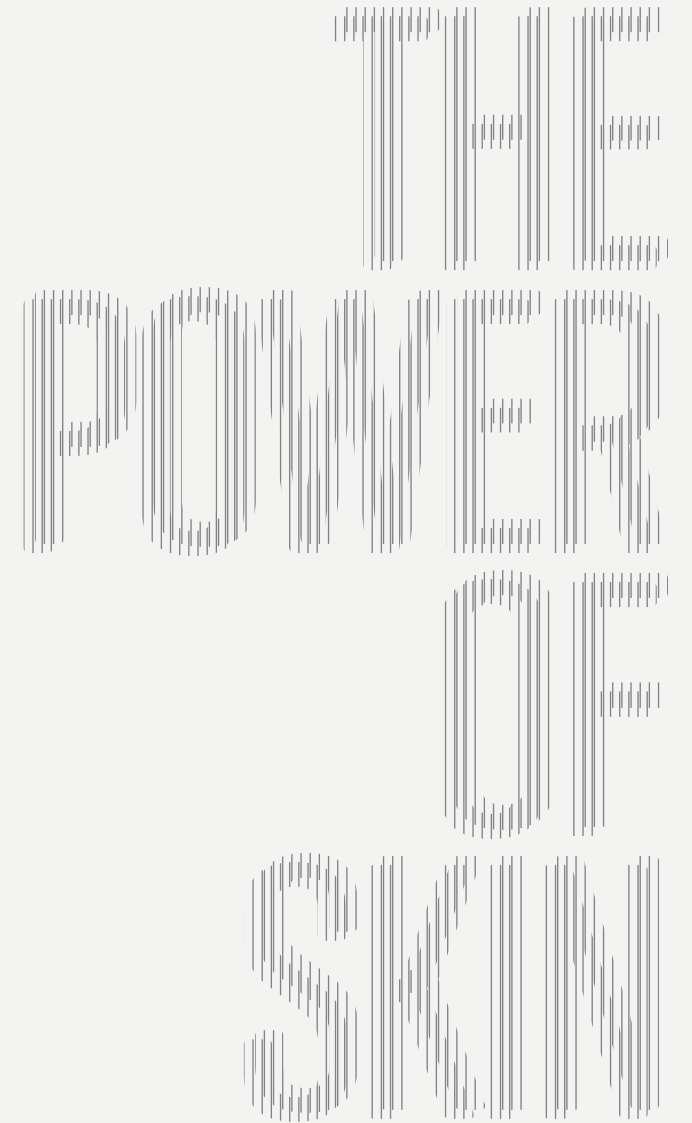
Skinless disconnects, is repeated multiply, what should be inside is out, such as electric cables, and what is out should be in, such as the bricks. Venice without its marble skin would have been eaten piece by piece from the water without her beauty would not be a port, much less an aim, we have forgotten that the goals are not made of money but simply beauty. The gray concrete sections of the structure of the #oors, forcing the red bricks scratching and ask for help at the same time. Investigate Tirana as a homogeneously urban whole decorticated, comparing and discovering it with the most marbled italian cities, or the breathable re#ective glazed smartcities, is the goal.

Write not just about individual building solution, but about a surrounging, an urban emergency.



CATERINA SPADONI

Università di Ferrara, Polis University, Tirana
Architecture and Urban planning, Tirana, Albania
caterina.spadoni1@gmail.com



**NEW MATERIALITY IN CONTEMPORARY
ARCHITECTURAL DESIGN**

The contemporary skin of Herzog & de Meuron

TEXTURE, TRANSPARENCY AND TRANSFORMATION



DELGADO CÁMARA, ENRIQUE

UPM, Departamento de Proyectos, ETSAM, Madrid, España
erq.delgado@gmail.com

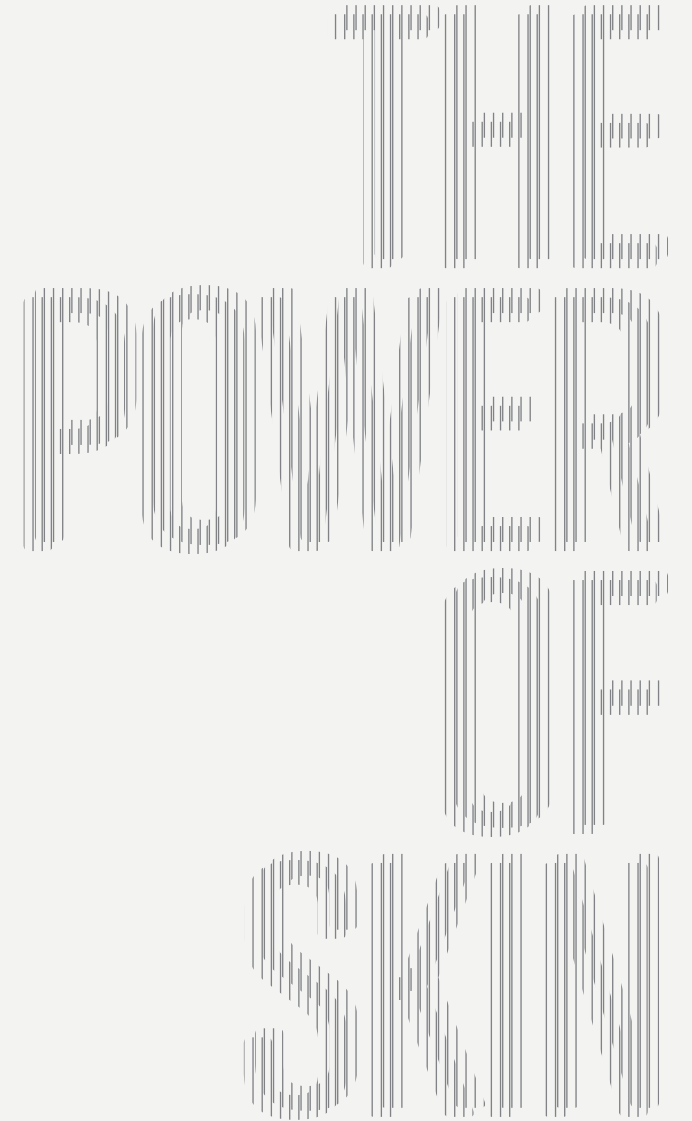
The purpose of this study is the architectural envelope and its materialization in the contemporary work of Herzog & de Meuron, analyzing three representative projects that show a special emphasis on the facade conception and the material treatment of the outer limit.

The work of Herzog & de Meuron is developed in a temporary transition located between the XX and XXI centuries. The analysis of this period will allow an approach to the key of the contemporary architectural project. A view in perspective will allow to appreciate the evolution of technology application in façade materials and in the way to do architecture.

The article is developed from original plans and documents that enable an analysis of the various projects, as well as from a specific bibliography of the reviewed projects. The specific graphic documentation has been generated by performing drawings in order to analyze and establish relations between the several projects.

The study is structured into three parts. The first describes the cultural and architectural context of the work of Herzog & de Meuron, establishing three specific projects to be analyzed, the Dominus Winery in California, the apartments building in the rue des Suisses in Paris and the Allianz Arena stadium in Munich. Relations with other contemporary facades they will be established from these architectural Works. The second analytical part study the three mentioned projects, making drawings and insisting in the use of façade materials and the technology used. Finally, in the third part a synthesis of conclusions is accomplished focused on the three architectural mechanisms used:

- Texture. Tactile and perceptive qualities of the materials.
- Transparency. Visual permeability in relation to the outside.
- Transformation. Modifications, changes and alterations inserted in the facades.



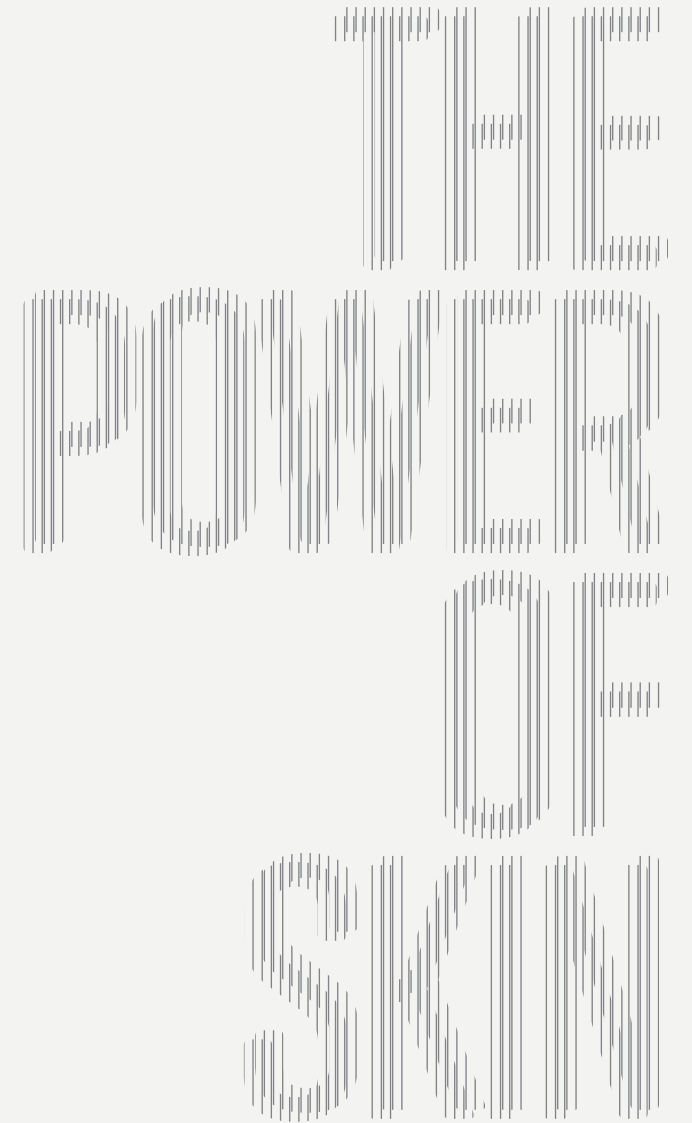
Language and Coating



GIACOMO PALA

Innsbruck University, Faculty of Architecture
Institute of Urban Design, Innsbruck, Austria
giacomo_pala@libero.it

In 1959 Roland Barthes wrote a famous essay [Language and Clothing] about the relationships between culture, language, fashion and dressing. In this text, Barthes defines clothing as a cultural sign able to express people's psychological depth. My paper will study the issue of coating in architecture drawing a parallel to Roland Barthes' researches thus highlighting cultural influences in the ideals of architectural skin as a semiotic tool for architecture. Consequently, in this paper an attempt is made to offer a theoretical investigation of coating in architecture as the property of a building revealing its "psyché". In other words, coating is studied as a rhetorical system enabling the expression of architecture's character. Consequently, the idea of coating in architecture is identified as a complex issue deploying material, linguistic and cultural meanings. Various examples from architectural history are then introduced. It is noted that the problem of coating in architecture has become a real theoretical problem only with the raising of modernity [and the theorization of aesthetics], taking examples from theorists and architects as diverse as Giovanni Battista Piranesi or Gottfried Semper as well as modernist and post-modernist architects. Through these examples, it is noted that coating and the interest for architectural skin is a theoretical problem related to and influenced by new technological advances, particularly for the post-digital age we all live in. Moreover, coating is studied as a way of incorporating new technologies in the architectural language and a number of specific contemporary architects and fashion designers are discussed within the relationship between "surface" [coating] and "character". Finally, since coating in architecture is revealed as a way to express a cultural code [which itself reflects a certain vision of the world], a number of theoretical questions are introduced in order to provide fertile ground for theoretical development.



**NEW MATERIALITY IN CONTEMPORARY
ARCHITECTURAL DESIGN**

Nestled by matter

INTROVERT SPACE AND ITS GAPS IN PETER ZUMTHOR'S ARCHITECTURE



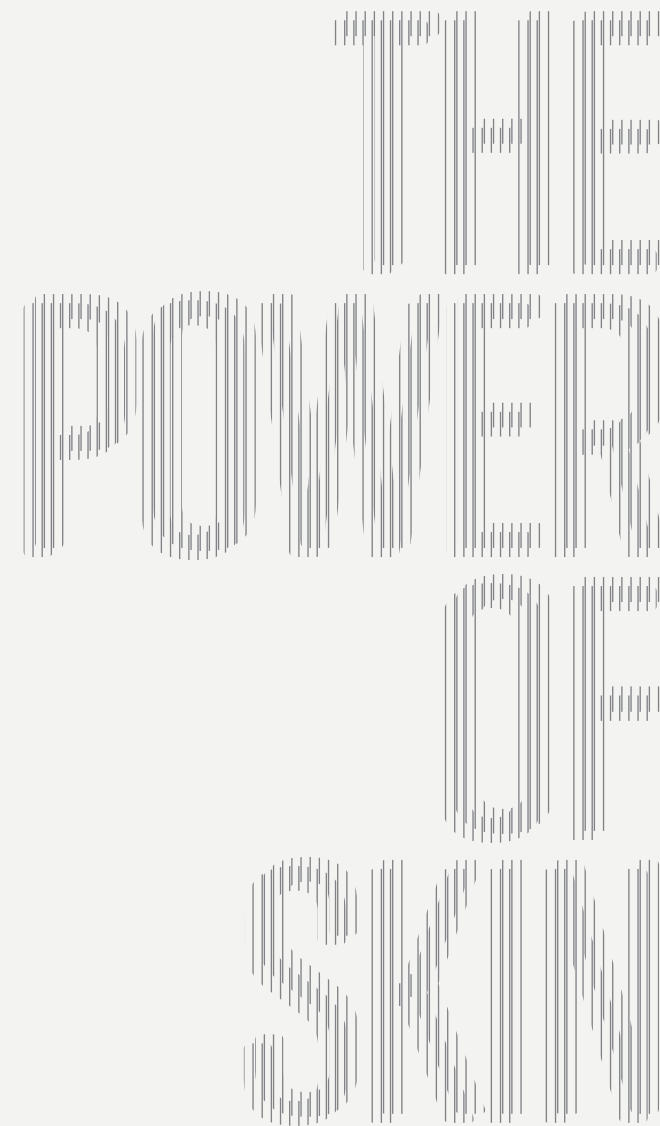
VALDÉS TÉLLEZ, CLAUDIA

Researcher architect, Advanced Architectural Projects
Escuela Técnica Superior de Arquitectura de Madrid, Madrid, Spain
c.valdestellez@gmail.com

Introvert space is studied in Peter Zumthor's work to understand how enclosed volumes with no exterior interaction and a simple parallelepiped shape can produce great spatial richness and deep significance in perceptual experience. Among the different properties of these constructions, matter gaps become the fundamental space that enhances the rest of architectural features.

A thorough analysis of certain projects from the author has been carried out to extract a classification of both secluded interior spaces and intermediate gaps that configure them. Thus, studied spaces are defined by their interaction with the exterior: The filter: Romain ruins refuge at Chur; The surrounding suspension: Saint Benedict Chapel; The hidden: Bregenz Art Museum; The excavated: Vals thermal baths. On the other hand, dominant gaps in Zumthor's work can be classified in: haptic, visual or acoustic, structural, situated through installations or circulations.

These spaces between matter are discovered as a constructive constant attitude in Zumthor, which explains the well known "hidden complexity in buildings of an apparent general simplicity". This way, material pauses become unexpected articulations between the functional space and the sensorial man. Thus, theoretical and practical study are completed for a space typology present since architecture origins and that in Zumthor reaches its maximal expression.



NEW MATERIALITY IN CONTEMPORARY
ARCHITECTURAL DESIGN

Technology of gratuitous

USE OF NATURAL DISCARDED FIBERS AS CONSTRUCTION MATERIALS



BAMBA VICENTE, JUAN CARLOS

UCSG [Universidad Católica de Santiago de Guayaquil]

Departamento de proyectos. Facultad de Arquitectura, Guayaquil, Ecuador

jcarlosbamba@gmail.com

DE TERESA FERNÁNDEZ-CASAS, IGNACIO

UCSG, Departamento de proyectos

Facultad de Arquitectura, Guayaquil, Ecuador

ignaciodeteresa@gmail.com

GONZÁLEZ CRUZ, ALEJANDRO JESÚS

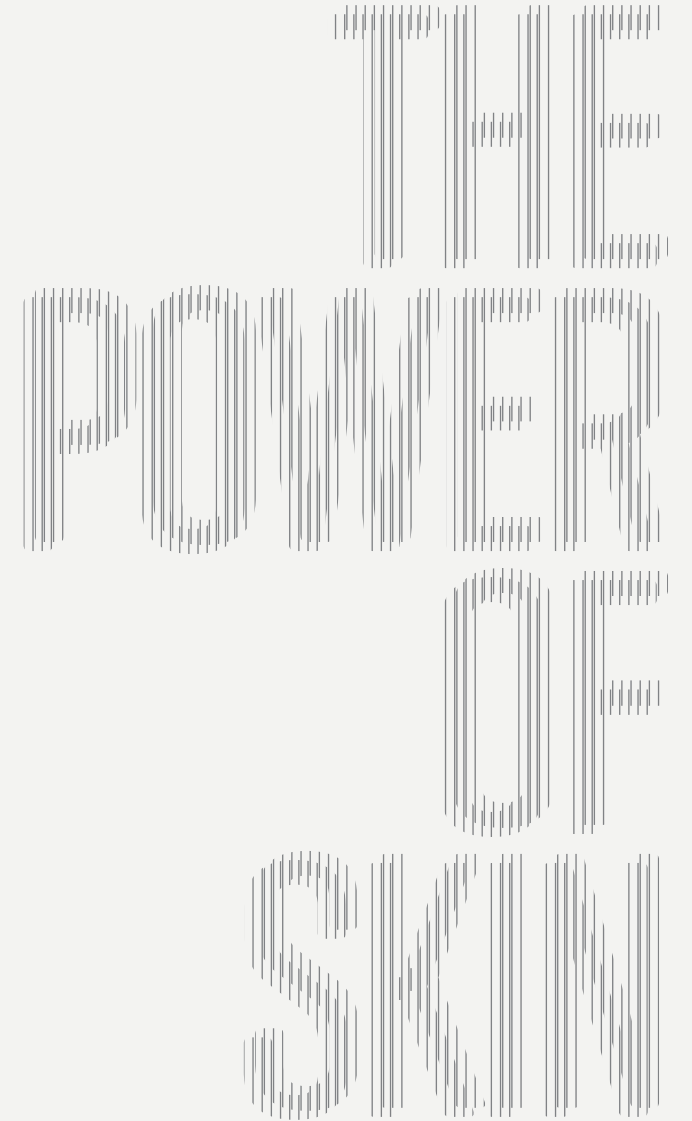
UCSG, Departamento de proyectos

Facultad de Arquitectura, Guayaquil, Ecuador

alejandroj.g.cruz@gmail.com

Contemporary architecture does not require materials with a high manufacturing cost, but affordable, accessible, applicable, and competitive materials, with technical skills that can be used in the low-cost housing projects; with the maximum energy contained in the matter itself, and the minimum energy required for processing, and where the conversion from matter to material requires the least possible effort. Innovation in construction technology seeks to optimize and reduce technology to the minimum necessary, instead of developing expensive methods in processing and construction. The inherent, accidental, free and available energy contained in the matter itself, represents the way to build an economic qualified architecture.

In this line, the Universidad Católica de Santiago de Guayaquil, is searching, through several teaching and research projects, the inherent qualities of natural fibers disposed in agro-industrial processes, for its use as eco-materials in housing low-cost projects. The research is divided in three phases: the first one, to discover the energy contained in the matter [physical and chemical qualities], a second phase of analysis of the instrumental energy that is necessary to provide for use [accessibility and processing], and a final phase of testing un real conditions the materials produced. The first two phases are carried out in the laboratory of the University, and the third in two natural laboratories that will evaluate the behavior of materials under extreme conditions: the Chimborazo volcano, and the Antarctica, where two shelters will take place using the discovered materials as skin. This approach is intended to determine how the gratuitous, understood as something economical and ecological, may entails a substantial change in the architecture of the necessary.



NEW MATERIALITY IN CONTEMPORARY
ARCHITECTURAL DESIGN

The theoretical envelope

THE LAST
STRUCTURALIST MEANING.
THE CASE OF HERMAN
HERTZBERGER IN UTRECHT



RODRÍGUEZ PRADA, VÍCTOR

Polytechnic University of Madrid

Department of Architectural Projects, ETSA, Madrid, Spain

vrprada@gmail.com

Herman Hertzberger's line of thought, traditionally ascribed to the Dutch structuralism, has spent decades seeking its expression for contemporary society. The text presents the project that has transformed the old Muziekcentrum Vredenburg Utrecht [1972-1979] in the Music Center TivoliVredenburg [2003-2014]. Both works, distanced by three decades, assume their way and solve similar requirements, updated through increased scales and uses.

This action subjects to analysis its architectural impact on the environment and on the image of the city; in the light of the transformation of an almost artistic object in a large urban scale container. It is intended to reveal the keys of this metamorphosis, which hides the main intangible finding of structuralism: the ability to assimilate and improve new technical, conceptual and functional means on a predetermined basis.

Furthermore, the hypothesis that expects to evolve from the architectural, diagrammatic and two-dimensional basic structuralism, towards a more theoretical, abstract and universal concept, is analyzed.

Paradoxically, this theoretical crystallization encounters on the envelope - always presupposed as a result of the internal projective density - the suitable habitat to express the intellectual vanguard of an architectural movement that is supposed to be obsolete for three decades.

Finally, in the text background, lies a constant idea that tries to show the friction between the structuralist sources against the answers provided by the line of thinking today, measure its adaptation to the context and assess the impact and the real importance of both performances as a symbol of their moment.

