

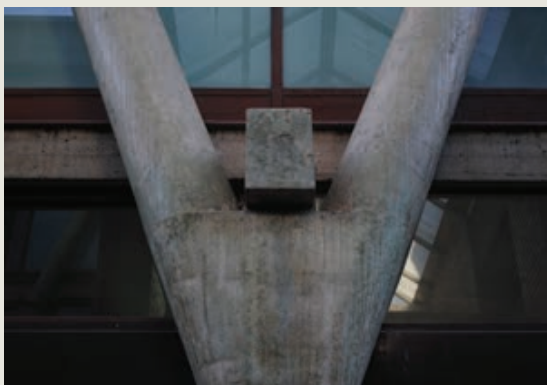
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Material quality in organic architecture.

Enrico Tedeschi's building for the Faculty of Architecture in Mendoza

Silvia Alvite

Alongside the theoretical flourishing of an organicist architectural trend around the concept of space, promoted since the mid-1940s by some Italian architects, a parallel line of research developed the path of biostructures as support systems integrated into the envelope. In Argentina, both sides had experimentation channels during the 1950s, and a case that uniquely condenses the maturity of those proposals is the building of the Mendoza Faculty of Architecture, designed by Italian architect Enrico Tedeschi between 1960 and 1964. The project explores systematicity, constructive rationality and organicity, rejecting material neutrality in favour of the exploration of a tactile field in which the limits of space are perceived blurred by effects of shadows, transparencies and dynamism accompanying a soft naturalistic mimesis.



FORM, SPACE AND MATERIAL IN ORGANIC ARCHITECTURE

In architectural theory and practice, naturalistic analogies have always been a source of inspiration; according to Waenerberg, they have been applied both to figurative imitation and to structural forms, or compositional strategies¹. One

such analogy was disseminated in Italy by Roman architect and critic Bruno Zevi, during the mid-1940s. His theory on "organic architecture" rejected the formal definition regulated by classical proportions, volumetric composition, and any kind of standardisation, holding instead as its core value the definition of inner space as the origin of external form. This was a position which –as explained by Hvattum– sought to defy the mechanical idea of form as imposed from the outside, through the idea of form as self-regulated from the inside, by means of an organic process². Zevi's proposal intended to replace the aesthetic choices of totalitarian regimes by others which would promote individuality, formal freedom, and space as the essence of architecture; to this effect, his chief model was the work of American architect Frank Lloyd Wright³. However, the idea that space represents the raw material of architecture was discussed among the very advocates of the Italian organic movement. Samonà

argued that it was actually a combination of space and matter, since Wright's architecture could not be explained by the geometric form of its inner spatial configurations, but by the continuity and plasticity of a "spatialised matter"⁴. On the other hand, Argan considered that, in order to apply Wright's ideas to design, we ought to understand that he was attempting to exalt nature in architecture, through a process by which "matter takes form", in a re-interpretation traversed by geometry and the rules of reason⁵. As Pope remarks, organicist thought in architecture tries not to visually imitate a natural element, but to develop an interaction between the architectural object, and the natural and constructed environment, by means of imitating the functional relations in nature⁶.

ENRICO TEDESCHI AND THE EXPRESSION OF SPATIAL CONTINUITY

One protagonist in that Italian discussion group was Roman architect Enrico Tedeschi (Rome, 1910 - Buenos Aires, 1978), whom in his youth briefly developed his professional activity in Rome, during the 1930s. After the Second World War, he worked as an urban planner in some plans to reconstruct Italy; together with Zevi, Piccinato, and other Italian architects, he was part of the *Associazione per l'Architettura Organica* (AAPAO), as well as of the executive board of *Metron* journal. In 1948, he emigrated to Argentina, where he became a distinguished professor at different universities. While he mainly devoted himself to teaching, he was a versatile figure within the disciplines of architecture and urbanism, as a designer, theorist and urban planner. His greatest academic achievements were attained as dean of the Faculty of Architecture at the University of Mendoza, between 1961 and 1972. Afterwards, he dedicated his last years to research, advocating an ecological approach to architecture through the development of solar energy technologies applied to house design.

In the 1950s, Tedeschi was a representative of organic architecture, by way of his pedagogical programmes and publications in Spanish. He promoted the same spatial ideas posed by Zevi, albeit without his politically-tinged arguments, inappropriate for the Latin American context. Through a call to formal freedom, Tedeschi opposed figurative abstraction as a design tool, identifying it with a standardising homogeneity; instead, he affirmed the re-valuing of the human factor and its singularity, in order to "[...] overcome the cubist experience, which values above all volume and proportion"⁷. In 1955, he devoted a critical essay to the figure of Frank Lloyd Wright, highlighting in his work the use of materials in their natural expression, an affinity with landscape, a free formal expression, and the role of space in plactical generation⁸. Some years later, he further developed this approach, adding certain aspects defined by an environmentalist matrix which drew him near to a particular interest in structures and climate. Those were times in which psychological and perceptual factors had been brought into the methods of the architectural project, incorporating the variables of viewing space in movement and transparency⁹.

Tedeschi was sceptical that technology could solve aesthetic issues, although he neither favoured an artisanal or vernacular view in relation to materials. He was interested in industrial improvements, and welcomed the experiments with modular prefabrication systems developed in post-war Europe. The success of these systems, according to Tedeschi, was that standard elements, regulated by networks, yielded flexibility, growth capacity and aesthetic interest, so long as they did not become monotonous:

"This is the system we have so strenuously tried to avoid in recent years, so as to achieve expressions of spatial and plactical continuity, closer to our dynamic view of the outline"¹⁰.

On the occasion of publishing an article on structural design in architecture, Tedeschi illustrated the search for aesthetic value and creativity in structures with the examples of Wright's

Johnson Wax building in Wisconsin, and architects Bijvoet and Duiker's Open Air School in Amsterdam; in both cases, a constituent structure of the envelope – emphasised by the dissolution of a solid appearance in volume – was the mainstay of the global expression¹¹ (fig. 02). His interest in structural expression led him to cherish the studies of contemporary engineers, who combined technical expertise with formal principles taken from the biological world¹². In his most well-known didactic work, *Teoría de la arquitectura* [*Theory of architecture*], Tedeschi referred to works by Torroja, Nervi and D'Arcy Thompson, and put forward arguments for optimising form in view of a better structural performance of the material; however, he observed that the engineers' approach to design was, in general, devoid of sensitivity to the human scale, an aspect he deemed essential to architecture¹³. Nonetheless, Tedeschi did not consider there was a rivalry between disciplines, since he neither espoused a formal and spatial search dissociated from the material's very own efficiency and nature, a problem he saw in Oscar Niemeyer's works in Brasília, as opposed to Pier Luigi Nervi's structures in Turin:

"Let us see how the vault of Turin is transformed by its elegant fanned supports, whose shape bring to mind the stems of palm trees; the extraordinary fineness of the vertebrae arches and of the ribs joining them, where the structure's naturalistic and organic sense is reaffirmed: the strong sense of human scale – so prone to become lost amid such structural dimensions –, created by the lateral balconies and galleries; its lavish illumination, making the ceiling transparent and soaring. Our admiration becomes multiplied"¹⁴.

Engineer Nervi was a close figure to Tedeschi. Both of them had been part of the School of Organic Architecture in Rome between 1946 and 1947; shortly after, Nervi developed the design and structural calculation for the roof of the University Campus's Communal Centre in Tucumán, Argentina, a project Tedeschi also took part in (fig. 03). Giulio Pizzetti – another Italian engineer who lived for some years in the country – also spread, from his chair at the University of Buenos Aires, the methodologies of structural design based on empirical model testing, and, among other works, he collaborated with architect Amancio Williams on the experimental design of hollow vaults for the hospitals of Corrientes (1948–53)¹⁵. Regarding Argentine architect Eduardo Catalano, who took part in the project of Tucumán, he emigrated to the United States in the 1950s, and devoted a significant research period to structural studies based on modules and continuous, warped surfaces (fig. 04). Though not many, the structuralist experiences were well known to Tedeschi.

THE BUILDING FOR THE FACULTY OF ARCHITECTURE OF THE UNIVERSITY OF MENDOZA

In the 1960s, Enrico Tedeschi had the opportunity to experiment with this world of technical-formal exploration, when he took part in the creation of the Faculty of Architecture of the University of Mendoza, and served as project director for the construction of its premises, in collaboration with engineers Diego Franciosi (design and assembly of prefabricated elements) and Roberto Azzoni (general calculation)¹⁶. The design effectively solves a most elegant seismic structure achieving a complex material rationalisation, a feature which, as noted by Codina, results in a technical innovation not based upon traditional construction uses and expertise for the material¹⁷. Intending to work on low construction costs, they made use of prefabricated parts manufactured by SCAC company: some of them were intended for buildings – such as beams and precast tiles, made of prestressed and reinforced concrete, used for the mezzanines and the roof –; while others were originally intended as urban lighting poles, but were used in this work as segments for a network configuring the main sides of the volume at the front and rear façades¹⁸. The latter elements, made of spun concrete, have a conic development, since their cross-section diminishes as they become higher. This was an essential feature in

defining the design, given that they were used as elements in a network whose cross-section diminishes along with the vertical development of the building's façade. The network's diagonal layout owes mainly to the aim of reducing deformation, which stems from the need of seismic resistance. The progressive reduction of the conic pieces' cross-section, together with the dynamic effect of the pattern's diagonal direction, generate the perception of an ascending movement, an effect which allows a regular, mechanically-constructed composition to have an organic appearance. A key moment in the process, according to the author himself, was when he had to reflect upon the design of the joints between the poles:

"[...] if we gave a simple, continuous solution to the joints articulating these conical poles in the diagonal network, would we not achieve that organic, natural character suggested by the environment's park, by means of presenting these columns as elements born from the ground and becoming thinner as they grow, just like tree trunks?"¹⁹

The design of the joints and the supports blurs the distinction between the parts, and adds to the network's impression of growth, as if it were a great, single piece, whose naturalistic inspiration is intentional, for we can appreciate both a tree-like figure and an anthropomorphic figure (fig. 05). Codina's studies on the project reveal that underlying this façade's composition is the golden ratio, integrating the network's slope angle to a 2.44 m modular system, yielding 3.20 m vertical intervals between the upper levels of the slabs. A mathematical order which would represent a rationalisation of certain natural logics, just like Argan saw in Wright's design processes (fig. 06). However, the design's organic character is not only a consequence of geometrical knowledge, but also of other holistic and material factors: first of all, each element is integrated into a greater complex, wherein each part occupies a definite position, bringing about a network arrangement, a relational – not hierarchical – structure among the elements. The relation between structure and space, through the permeability of both the pattern and the transparent surfaces behind, avoids the wall curtain façade and simulates a diaphragm between the inner and outer treatment (fig. 07). The structural mass becoming lighter in weight as it ascends allows for the illusion of natural growth. Finally, the concrete's greenish colour enhances the visual effect of continuity between building and surroundings (fig. 08).

The design of articulations exhibits a delicate attachment between the pieces, leaving no room for brutalist interpretations (fig. 09). As Adagio remarks, the building is part of a set of works completed during the 1960s, which coincide with a process of great development in the reinforced concrete industry in Argentina, and with an interest in prefabrication, combined with on-site, artisanal construction techniques²⁰. Nonetheless, unlike other contemporary local works, the systematisation of the pieces, the construction process and the structural design do not explain the project's global concept, whose objective is not giving materials a central role. The dominating aspects, instead, are the effects of multiple reflections, a result of the shadows cast by the external structure towards the parallel surfaces of the rear glass walls enclosing the workshops, and towards the flat perpendicular planes formed by the front galleries, clad in a reddish smooth cement. The organicist conception we find in this design shifts the focus from figure to material, since here formal ideas are not limited to a figurative naturalistic analogy, but yield results of great haptic sensitivity. This orientation can be better understood if we consider that in Tedeschi's theory of architecture, architectural *form* is defined by a triad comprising the concepts of *space*, *plastics* and *scale*; wherein *plastics* contributes "the formal character of the constructed elements limiting space", not only owing to their geometrical properties, but also to material qualities, such as texture, light and colour, always serving a spatial purpose²¹. On the occasion of explaining the mushroom columns designed by Wright for the Johnson building, Tedeschi asserted:

"[...] their relevance as technical facts is surely inferior to their relevance as plastic forms which determine an eminently new and rich special (sic) situation. This is not an invention which any construction could benefit from, as is fitting to a truly technical work; it is instead a unique piece, created with outstanding constructive mastery for a spatial purpose, and for a single building."²²

The unique pieces of the building for the Faculty of Mendoza are its joints and the V-shaped supports, exclusively conceived and made on site for this project. The plasticity and lightness of the structural elements allow for a hybrid language –halfway between tectonic and textile– which evinces a concern over the deep interweaving of form, material and technique; yet without forgoing a necessary dose of abstraction, proper to the principles of a more orthodox modern architecture, unforfeiting in the categorical determination of its volumetry and in the functional flexibility of its ground plan. However, the building's appearance as object is evaded; from a certain distance, its façade is perceived as part of the landscape, while its horizontal expansion is, depending on the observer's point of view, more or less recognisable (fig. 10). This is in part due to the fact that volume is never discerned in its four sides, since two of them are dividing walls and, being clad in clay brick, emphasise the interruption of the network's continuity on both sides. In the vertical direction, on the other hand, the connection with the roof is solved in a softer way; despite the network being placed behind, from a certain distance it acquires continuity among the tiles and the tilted poles, for their thinness and bending closes its extremes concavely (fig. 11).

The project was positively received in the critical assessment of the history of modern architecture in Argentina, because it is conversant with prevailing themes in the country's professional practice. However, it was conceptually anticipating not an idea, but a set of ideas on the subject which are quite current; as observed by Stan Allen, it works just like some architectural tendencies based on geological metaphors in the 21st century: they are open assemblages and porous envelopes whose iconic shape or defined contour is not as relevant as the relation they develop between different parts, and between inside and outside²³. A landscape conception of architecture which, though with different features, Tedeschi himself had found in his travels around Cuzco, in Latin American baroque architectural culture²⁴.

Silvia Alvite

She was born in Buenos Aires in 1977. She graduated with a degree of Architecture from the University of Buenos Aires; with a Master in Theory and Practice of Architectural Design, from the Polytechnic University of Cataluña; and with a Doctorate in Architecture, from the University of Buenos Aires. She is currently Adjunct Professor of Theory of Architecture I and II, at the National University of San Martín, Argentina. Her doctoral thesis studies the evolution of ideas in the thought and works of Italian architect Enrico Tedeschi, within the background of theoretical and practical changes in the discipline during the second half of the 20th century in Latin America.
E-Mail: silvia.alvite@fadu.uba.ar

Notes

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Images

01. Detail of conic pieces' juncture, joint, crossbeam and concrete slab. Photography of the author, 2011.

02. Enrico Tedeschi. "Contemporary structure in architecture". *Nuestra Arquitectura*, 287, June 1953, p. 152.

03. Pier Luigi Nervi. Tests for the roof structure of the University Campus's Communal Centre in Tucumán, Argentina. 1948. Ciudad Universitaria de Tucumán, UNT, San Miguel de Tucumán, 1950, p. 31.

04. Eduardo Catalano. Structure design on a double-curved surface. Gazaneo, J.; Scarone, M., Eduardo Catalano, Instituto de Arte Americano e Investigaciones Estéticas (FADU-UBA), Buenos Aires, 1956, figure 40.

05. Enrico Tedeschi. Building for the Faculty of Architecture of the University of Mendoza, Mendoza, Argentina, 1960-64. Elevation 1:50. Archive: Universidad de Mendoza.

06. Enrico Tedeschi. Building for the Faculty of Architecture of the University of Mendoza, Mendoza, Argentina, 1960-64. *Architectural Review* 829, March, 1966, p. 170.

07. View from inside the entrance hall towards the garden. Photography of the author, 2011.

08. Detail of conic pieces' juncture, joint, crossbeam and concrete slab. Photography of the author, 2011.

09. Diagram of articulation of the structural elements. *Summa* 85, January, 1975, p. 73.

10. Distant view from the entrance to the front garden. The building's porous quality is highlighted by the illuminated interior. Teoría de la arquitectura, *Nueva Visión*, Buenos Aires, 1969, 2nd edition, figure 40.

11. View of the structure towards the junction with the roof. Photography of the author, 2011.

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Rescatando la *machine à habiter*: la villa palladiana en la segunda vida de los *grands-ensembles* transformados de Lacaton y Vassal

Ana Tostões
Jaime Silva

A partir de algunas de las cuestiones planteadas en la llamada "Ontología orientada al material", como la Estética y ética de la sostenibilidad, este trabajo sostiene que la acción de reciclar viviendas sociales representa un modelo de regeneración social.

En 1995, la galardonada película *La Haine* reveló al mundo el caos diario en el que vivían los habitantes de los *grands-ensembles* (viviendas sociales francesas de la posguerra): el desempleo, la criminalidad y la violencia eran algunos de sus compañeros habituales. Ante esta realidad incuestionable, el Estado responsabilizó rápidamente a los modelos urbanísticos y arquitectónicos, poniendo en marcha un ambicioso plan de demolición-reconstrucción que sigue vigente a día de hoy. Desde 2004, los arquitectos Anne Lacaton y Jean-Philippe Vassal se oponen activamente a esta política injustificada. Han demostrado, no solo mediante la literatura sino también a través de su obra, que los *grands-ensembles* merecen una segunda vida. Tomando como su principal "materia prima" el contexto ya construido, han rescatado sucesivamente la *machine à habiter* del movimiento moderno llevando los espacios de transición de la villa palladiana a cada uno de los apartamentos habitados.



París, año 1995. Un grupo de tres hombres jóvenes toman un tren al centro de la ciudad. Al amparo de una noche seductora, caen en una espiral de drogas, delincuencia y violencia, extendiendo una telaraña de agitación por los tranquilos barrios *bobo* de París. Al amanecer, uno de ellos acaba siendo "accidentalmente" asesinado por un policía con prejuicios. Probablemente proceden de Chanteloup-les-Vignes, una ciudad satélite situada a las afueras de la capital francesa, construida para alojar viviendas sociales después de la Segunda Guerra Mundial. Colosales bloques residenciales