

**THE CONSTRUCTION OF CLIMATE**  
IN MODERN ARCHITECTURAL CULTURE, 1920-1980

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(EDS.)

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PROLOGUE

CLAUDIA SHMIDT

PRESENTATION

JOAQUÍN MEDINA WARMBURG

*Architecture, Climate and Modern Culture*

INTRODUCTION

EDUARDO PRIETO

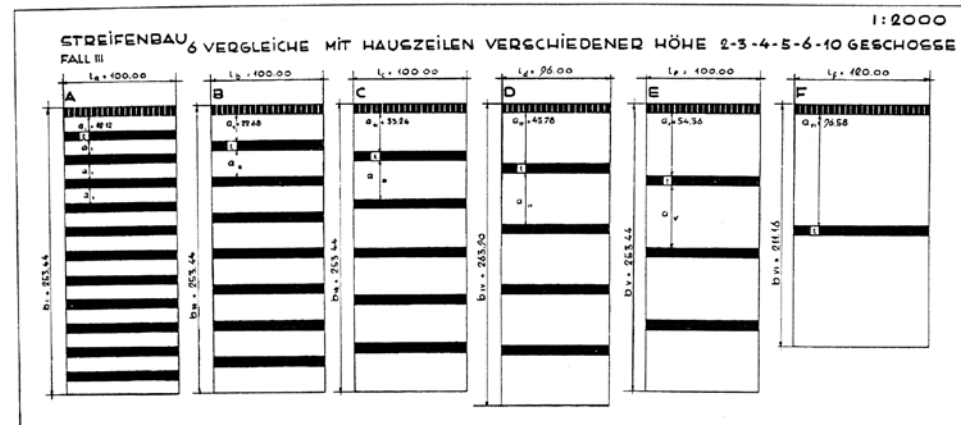
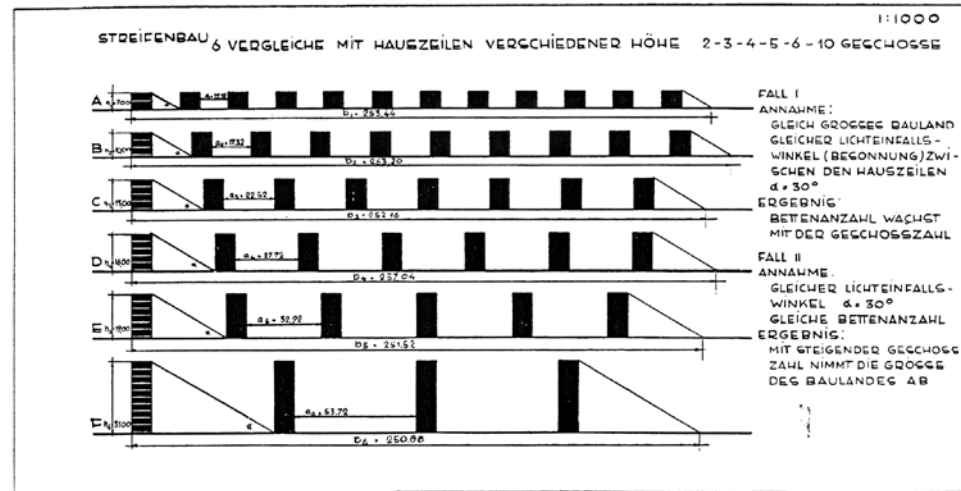
*Climate as Ideology. Determinisms in Architecture, from  
Enlightenment to Modernity*

"The sympathy or antipathy that rooms can inspire in me is violent. Almost physical.  
Like a climate." (Victoria Ocampo)

Interior with cactus in the Casa Ocampo by Alejandro Bustillo in Buenos Aires, 1928  
(Archivo Alejandro Bustillo, Universidad Torcuato Di Tella)

## ARCHITECTURE, CLIMATE AND MODERN CULTURE

JOAQUÍN MEDINA WARMBURG



Layout of the linear blocks according to the angles of sunlight in Berlin.  
Walter Gropius, "Flach-, Mittel- oder Hochbau," published in *Das neue Berlin*, April 1929.

In the first volume of his influential book *Das englische Haus* (1904-1905), architect Hermann Muthesius dedicated a succinct though significant paragraph to climate as a conditioning factor of the exemplary English domesticity which, in his opinion, was a pertinent and mandatory reference for the modernization of German bourgeois culture. Far from falling into a univocal causality of climate determinism, he described the ambivalence of his own experience with the constant humidity and cloudy skies of the British Isles.<sup>1</sup> On the one hand, the effect of weather conditions on people's mood encouraged families to gather around the hearth. But there was also the opposite effect, inciting them to rebel against depression by exercising outdoors. The typical sporting culture of the English could then be explained by their refusal to yield to their own weather. Exposed to the elements, they had to keep active, distinguishing themselves from the idleness of more benevolent latitudes – such as the people from the South who, in Muthesius' opinion, were used to passing the time in the apathy of the *piazza*.

The causality and stereotypes put forward by Muthesius help understand the complex connection between modern architecture and climate to which this book is devoted. Just think of the yearning for the outdoors and the sporting habits that characterized the modern lifestyle favored in the 1920s and 1930s by avant-garde architecture, not only in Central Europe. The longing for sun and fresh air must have responded to their submission to environmental conditions and, at the same time, to the cultural construct of a climate yearning bordering on escapism. Ernst Bloch's interpretation would be correct. In *Das Prinzip Hoffnung* (*The Principle of Hope*, written between 1938 and 1947) he spoke of the promise of happiness contained in the new architecture of the 1920s and 1930s as a desire for meridional externality. Such romantic afterthoughts were systematically denied by the protagonists of the avant-garde most committed to the *Sachlichkeit*, that is, to an empirical and utilitarian objectivity. Climate utopianism, however, was ubiquitous in avant-garde movements that purported to be radically objective. In 1929, critic Adolf Behne and urban planner Martin Wagner – two partisan activists of the new architecture – warned Walter Gropius that his proposed residential neighborhoods in linear blocks, laid out according to the angles of sunlight in Berlin, were hardly objective. They argued that Gropius subordinated the whole urban structure to something that was less than marginal, since the German capital hardly enjoyed 30 days of full sunlight a year.<sup>2</sup>

## The "Machine for Living": Solarium and Greenhouse

A black-and-white photograph taken in 1927 in Dessau seems to confirm Behne's and Wagner's critique of Gropius' excessive climate optimism. It shows Walter and Ise Gropius sunbathing with guests on the terrace roof of the Bauhaus director's house. The four of them are wearing canvas shoes and modern dark bathing or sporting suits, slightly different for men than for women. Seated or reclining on mats laid out on the floor and a hammock, they share a relaxed scene of elaborate domesticity, with drinks, fruit and a flower pot. But there is no centerpiece around which people are gathered. Quite the contrary. They are

<sup>1</sup> MUTHESIUS, Hermann: *Das englische Haus. Band I: Entwicklung*, Berlin, Ernst Wasmuth, 1905 (Berlin, Gebrüder Mann, 1999), p. 4.

<sup>2</sup> BEHNE, Adolph and WAGNER, Martin: "Vorwort des Herausgebers," in: *Das neue Berlin*, April 1929, no. 4, p. 74. The comment by Behne and Wagner refers to the thesis that Gropius would later defend in the conference he gave in the III CIAM in Brussels in 1930 under the title "Flach-, Mittel- oder Hochbau?" ("Houses, Walk-Ups or High-Rise Apartment Blocks?").





Modern living as an expression of climate yearnings. Walter and Ise Gropius in 1927 sunbathing with guests at the solarium of the house of the Bauhaus director in Dessau (Bauhaus Archiv Berlin).



The modern liberated body, according to Sigfried Giedion in *Befreites Wohnen*, Frankfurt 1929.

perpendicularly aligned with the sunlight, exposed as the linear blocks for Berlin. The canvas that covers their backs serves the purpose of blocking unwelcome glances and protecting them against the wind. The purpose was not to cast a protective shade. In any case, they do not seem to have needed shade when they decided to immortalize the moment – the diffuse shadows reveal a cloudy sky.

The scene on the terrace in Dessau is the willing representation of a modern social lifestyle consistent with what was postulated that same year by Adolf Behne in *Neues Wohnen – neues Bauen* (new dwelling – new building, 1927). In terms of social psychology, the house designed by Gropius was a clear manifestation of the way in which the defensive psychosis that still dominated nineteenth-century bourgeois interiority had been overcome in modern times. Having lost the fear of exterior threats, the heraldic and decorative “armors” of historicism had been laid down, with their latent violence, giving way to smooth white surfaces like the ones at the Dessau house, shown in Behne’s book.<sup>3</sup> However, it cannot be said that large windows – whose proportion to opaque surfaces was aesthetically valued by Behne – rendered it transparent or that the limit between the exterior and the interior was put to question. Some of the interior photographs, with the Gropiuses having tea on tubular steel furniture, show the glass window that allowed access to the ground floor terrace and, in front of it, a large cubic flower pot filled with cacti. These exotic species became true fetishes for modern living. One may wonder if it was merely due to its sculptural values.<sup>4</sup> Sigfried Giedion’s book *Befreites Wohnen* (liberated dwelling, 1929) offers a clue. The author comments on a photograph of the greenhouse at the Jardin des Plantes in Paris and points out the need for light and heat shared by men and plant species.<sup>5</sup> Architects would have taken almost 100 years to adopt the principle of greenhouses to transform bourgeois interiors.

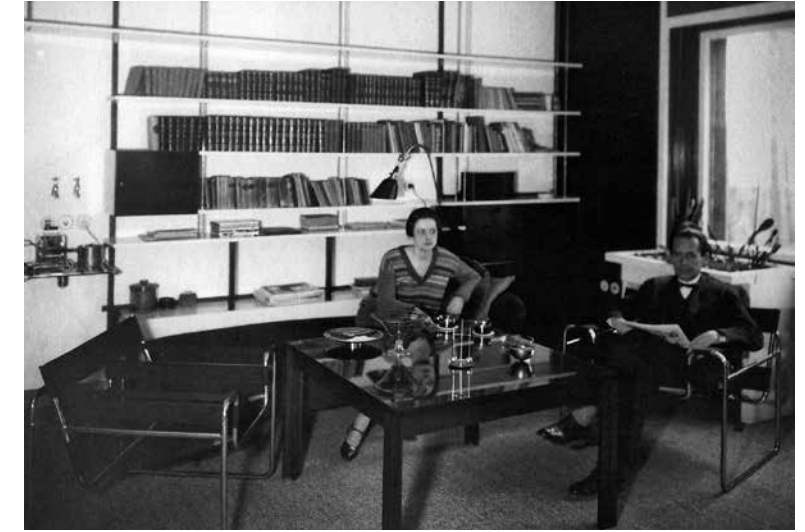
3 BEHNE, Adolf, *Neues Wohnen – neues Bauen*, Leipzig 1927, pp. 148-149.

4 For more details on the role of the cactus between Magic Realism and “Neue Sachlichkeit,” see: GONZÁLEZ, Ángel, “Meditación de los cactus” / “Meditation of the Cacti,” in: *Realismo Mágico. Franz Roh y la pintura europea, 1917-1936*, Valencia 1997, pp. 34-47 / 279-284. LAHUERTA, Juan José, “Instantáneas de viaje” / “Travel Snapshots,” in: PIZZA, Antonio, *J. L. Sert y el Mediterráneo*, Barcelona 1997, pp. 192-207.

5 GIEDION, Sigfried, *Befreites Wohnen*, Frankfurt on the Main 1929, p. 22. A few pages before, Giedion had underscored the hygienist sense of sun orientation in urban planning, citing Gropius’ linear blocks proposal (pp. 15-16).



The defensive psychosis of the premodern body, according to Adolf Behne in *Neues Wohnen – neues Bauen*, Leipzig 1927.



The modern interior as a conservatory: Walter and Ise Gropius, circa 1927, in the interior of their house in Dessau, with cacti in front of the door leading to the terrace.

The remarkable fact that Giedion overlooked is that indigenous plants, contrary to humans, do not require a shared biotope that is isolated from the exterior and preserved by a building which, just as a machine would, transforms the solar radiation that goes through the glass in a climate-controlled bag of air. The implementation of that principle to build the conservatories or winter gardens for family homes – the indoor complement to the solarium on the roof – clearly suggested that the vegetative condition of “the house as an expression of race” was overcome. Oswald Spengler had theorized about it still in the 1920s in *Der Untergang des Abendlandes (The Decline of the West, 1922)*. That same year Gropius wrote an essay titled “Wohnmaschinen” (‘machines for living’, a term coined by Le Corbusier in 1921), where he postulated the “utopian ideal” of the house as an industrial product consistent with the “growing exchange that dilutes the borders among races and peoples.”<sup>6</sup> A house for a nomadic “*Erdbewohner*” (inhabitant of the earth) who does not need a “property” but rather a light, mass-produced dwelling comparable to modern means of transport of the machine age: ocean liners, planes, airships, cars and locomotives.

Gropius continued to pursue this utopia after the Bauhaus was moved from Weimar to Dessau. Furthermore, one of the factors that carried weight in favor of the move was the presence of industries such as Hugo Junkers’ who, in addition to planes, manufactured heating systems for domestic use. Gropius himself installed one in his new house.<sup>7</sup> Simultaneously, in projects such as the experimental neighborhood in Dessau-Törten (1926-28) or the Weissenhofsiedlung in Stuttgart (1927) Gropius scientifically studied the thermal behavior of his novel panel systems for light, dry-mounted façades.<sup>8</sup>

To a large extent, the modern “machine for living” was for Gropius a technical device for climate control. The fact that the reason both for the energy principle of conservatories and for portable, mass-produced

6 GROPIUS, Walter, “Wohnmaschinen,” 11-page essay dated 6 February 1922, Gropius-Papers II, 19/694-697, Bauhaus Archiv Berlin. About the concept of the “machine for living,” see: EBERHARD, Katrin, *Maschinen zuhause. Die Technisierung des Wohnens in der Moderne*, Zürich, GTA Verlag, 2011.

7 See ERFURTH, Helmut, *Im Rhythmus der Zeit. Hugo Junkers und die zwanziger Jahre*, Dessau 1994. Junkers’ hot water systems had already been implemented in the Haus am Horn in Weimar.

8 See for instance: “Vorläufiger Bericht über die wärmeschutztechnischen Untersuchungen in den Versuchssiedlungen der Rfg. In Dessau-Törten und Frankfurt am Main-Praunheim,” in: *Mitteilungen der Reichsforschungsgesellschaft für Wirtschaftlichkeit im Bau- und Wohnungswesen*, 1929, no. 7, pp. 11-24; no. 25, pp. 30-31; Deutscher Werkbund (ed.), *Bau und Wohnung, Stuttgart*, Akad. Verlag Wedekind, 1927, p. 64.

houses had to do with nineteenth-century colonialism is no minor detail. This reveals their political implications as cultural ideals. Certainly, “machines for living” were also the setting to recreate images with climate-cultural connotations. Maybe it was the critic Steen Eiler Rasmussen who most sensibly detected this dimension in Gropius’ house in Dessau. In the chapter he devotes to Romanticism in his *Nordische Baukunst* (1940) he recalls a walk he took around Dessau in 1928. The Dessau architecture successively transported him to places like Goethe’s Italian Arcadia or, in the case of Gropius’ houses, reminded him of images of ocean liners and the pleasant memories of a vacation trip.<sup>9</sup> In a prior publication, his “romantic” characterization of this white architecture included a skeptical comment: “Living there and then paying for heating?”<sup>10</sup>

We do not know if the cacti in Gropius’ house contributed to elicit Rasmussen those images of distant worlds and climates. If that had been the case, they would have been exotic worlds in the warm climate of a “cultural” South, consistent with the modern yearning for externality described by Bloch. But let us again consider Gropius’ house, more specifically the roofed terrace under the seeming cantilever on the upper floor. The photographs taken in the summer show that the cacti were transported to the exterior, that is roofed and protected laterally by a huge glass screen. The dweller is offered an intermediate, transitional situation – rather than an expanded threshold, a place to be sheltered and in contact with the natural environment. The table and the corresponding chairs in this space anticipate what a decade later would become a spatial quality and a programmatic use in the “screened porch” in the Gropius House in Lincoln (Massachusetts, 1937–38).

### Bioclimatic Regionalisms

This first project in the United States, undertaken together with Marcel Breuer, was a true statement of intentions both modern and regionalistic, particularly as a climate device – a vernacular “machine for living.” In addition to resorting to traditional construction materials such as wood and white bricks, some of the architectural elements included the above-mentioned screened porch with metal mesh protection against insects and roller blinds against the sun and the wind, a terrace with a pergola by way of sun porch in the upper floor, vinecovered trellises on the façade, the inner door in the main entrance, the living-room fireplace and the cantilever roof that shades the large windows in the ground floor in the summer. Solar incidence had also been thoroughly studied in the plan layout, in order to allow radiation to penetrate deep into the interior of the house in winter, contributing to what we today call passive efficiency. Summarizing, perhaps the most meaningful aspect of the Gropius House in climate terms is the absence of air conditioning which, at the time, was already used in houses not only in North America. Furthermore, air conditioning and its consequences on architecture were already the object of an environmental debate. A few years later Mumford read his conferences *The South in Architecture* (1941), where he claimed to have recovered elements belonging to the “American Form” such as the slatted shutter, and predicted that the modern house of the future would have no fixed wall but rather mobile, monofunctional layers to control light, heat and access (both of insects and humans): “Our climate, even apart from our social needs, requires such flexible forms of construction: yet for a lack of regional insight our mechanical ingenuity has gone into absurdities like our present air-conditioning systems, which, if they were widely adopted, would in most parts of the country make an impossible demand upon the water supply. The forms of building that prevail in any region reflect the degree of social discovery and self-awareness that prevails there.”<sup>11</sup>

In his fundamental study of the relation between architecture and energy, Luis Fernández Galiano highlighted Mumford’s role as a pioneer in the systematic description of the interrelation between

9 RASMUSSEN, Steen Eiler, *Nordische Baukunst*, Berlin, Wasmuth, 1940, p. 17.

10 RASMUSSEN, Steen Eiler, “Neuzeitliche Baukunst in Berlin. Bilder von einer Reise von Steen Eiler Rasmussen, Kopenhagen,” in: *Wasmuths Monatshefte für Baukunst*, 1928, no. 12, pp. 554-555.

11 MUMFORD, Lewis, *The South in Architecture* (1941), New York, Da Capo Press, 1967, p. 27.



Walter and Ise Gropius having breakfast in the screened porch of their house in Lincoln.

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"Airtopia," advertisement for air conditioning equipment from the Californian magazine *Arts & Architecture*, 1945.

technology and culture.<sup>12</sup> But his work *Technics and Civilization* (1934) did not yet contain any references to the architectural problem of air conditioning which gained importance toward the end of the decade. It was precisely in 1939 that Mumford visited the Gropius House in Lincoln. He wrote on the visitors' book: "Hail to the most indigenous, the most regional example of the New England home, the New England of a New World."<sup>13</sup> His regionalistic concerns peaked in 1947 when he launched, from his column "Sky Line" in the *New Yorker* magazine, what was called the New Regionalism of the Californian "Bay Region School," and contrasted it with the stale clichés of International Style.<sup>14</sup> The MoMA took up the gauntlet and four months later organized a symposium with the people who, in 1932, had coined the term International Style, such as Henry-Russell Hitchcock among others. Gropius specifically unraveled the dichotomy with his response to Mumford: "I was struck by the definition of the Bay Region Style as something new, characterized by an expression of the terrain, the climate, and the way of life, for that was almost precisely, in the same words, the initial aim of the leading modernists in the world twenty-five years back."<sup>15</sup>

Strictly speaking, it is not true that the climate factor explicitly constituted a key argument toward 1925. Of course, not so in terms of regionalism – a notion that took root in the nineteenth century and that used to respond to a legitimizing rhetoric of political wills. But it is true that since 1926 the activists of the new architecture in Germany started to appropriate the climate argument in their acrimonious controversies with

12 FERNÁNDEZ GALIANO, Luis, *El fuego y la memoria. Sobre arquitectura y energía*, Madrid, Alianza, 1991, p. 184 (English edition: *Fire and Memory. On Architecture and Energy*, Cambridge MA, MIT Press, 2000)

13 Cited in: ISAACS, Reginald, *Gropius. An illustrated biography of the creator of the Bauhaus*, Boston-Toronto-London, Bullfinch Press, 1991, p. 236.

14 MUMFORD, Lewis, "Status Quo," in: *New Yorker*, no. 23, 11 October 1947, pp. 106-109.

15 The debate was documented in: "What is Happening to Modern Architecture?" in: *The Bulletin of The Museum of Modern Art*, no. 3, 1948.

the *Heimatschutzbewegung*, the movement that defended regional cultures and landscapes. Already in 1930, Behne anticipated Gropius' response to Mumford when he stated that the internationalism of the new architecture precisely lay in the consideration of elemental factors such as climate determinism, thus overcoming the formal prejudice of an ill-understood tradition.<sup>16</sup> But the high point of these regionalisms would come in the second half of the 1930s, with the international dissemination of modern architecture after the exile of many of its European experts.<sup>17</sup> In the case of Gropius and Breuer, the rhetorical recourse of regionalism helped them to make their own way in the New World without raising suspicions of cultural colonialism.<sup>18</sup> Similarly, emigrants such as Wladimiro Acosta in Argentina, Otto Königsberger in India or Bruno Taut in Japan and Turkey argued in their respective theories that modern architecture should not be transferred as a formalist fad, but should rather adapt to the specific conditions in each place, particular those related to climate. Otherwise, architecture would not be modern.

The personal experience of encountering other climate-cultural realities – where, for example, cacti could grow outdoors – is the topic of numerous writings that have contributed to the strong impact of this topic in the transformed world map that World War II bequeathed us.<sup>19</sup> Swiss Ernst Egli, who had shared the Turkish experience with Taut, rebelled in his book *Die neue Stadt in Landschaft und Klima* (1951) against the oversimplified imitation of shapeless, ubiquitous structures at the turning point of the urban colonization of the planet. Faced with this, he defended the climate and landscape determinism of the types of cities characteristic of the various regions, resorting to that end to the traditional analogy between house and city. For example, he explained the way in which the open house and the open city, which allow the circulation of the breeze, are characteristic of tropical conditions, while tightly-closed and self-absorbed houses and cities respond to extremely warm climates. These diagnoses reflected a yearning for a comparative analysis and constituted an explicit argument against the all-powerful technical nature of climate-controlled architecture at the time.

Alberto Sartoris, in turn, secure in his role as a traveler between worlds, continued cataloging the new architecture no longer stressing the ubiquity of forms but rather underscoring the transformations necessary to adapt to the various geocultural contexts. The title of each volume of his *Encyclopédie de l'architecture nouvelle* already announced a connection between “order” and “climate” – Mediterranean (1948), Nordic (1954) and American (1957) – according to a “cultural” notion of architecture that transcends its technical nature: “The way in which order can be brought to space and shape, of implanting volumes in the atmosphere and analyzing the relation between masses, the landscape and the ground is not merely a question of construction and technology. It is above all a moral act and a cultural event that interprets the different aspects of human feelings and knowledge.”<sup>20</sup> His references to climate were diffuse in the early volumes but became more consistent in the parts devoted to documenting Latin American architecture, with its proliferation of solar control and shading devices, such as fixed or movable louvers, vertical and horizontal blinds, pierced canopies, screens and trellises... In Sartoris' interpretation this formal exuberance was explained by the Latin origins of its cultural traditions. Certainly, the American volume clearly showed the radical contrast between the architecture of the curtain-wall with mechanical climate control from the North and the passive climate control devices of the South.

One need only look at the architecture of those years in our present-day cities to confirm that the contrast was not as harsh as Sartoris portrayed it to be. In addition, various protagonists of the time knew how to bridge the gap. For example, in the mid-1940s Richard Neutra of California studied the instruments of climate

<sup>16</sup> See for example: BEHNE, Adolf: “Nationales und Internationales im Neuen Bauen,” in: *Moderne Bauformen*, 1931, no. 5, pp. 209-212.

<sup>17</sup> The theory of a causal connection between exile and a regionalistic turn in modern architecture has been defended by Bernd Nicolai. See: NICOLAI, Bernd (ed.), *Architektur und Exil. Kulturtransfer und architektonische Emigration 1930 bis 1950*, Trier 2003.

<sup>18</sup> In that respect, see: DRILLER, Joachim, *Marcel Breuer. Die Wohnhäuser, 1923-1973*, Stuttgart, Deutscher Verlags-Anstalt, 1998, pp. 90-101.

<sup>19</sup> In that respect, see: LIERNUR, Jorge Francisco, “Fiebre tropical. Nuevos trayectos y nueva geografía en la cultura arquitectónica internacional como consecuencia de la Segunda Guerra Mundial (1940-1960)”, Minutes of the International Congress *Viajes en la transición de la arquitectura española hacia la modernidad*, Pamplona 6-7 May 2010, Universidad de Navarra, pp. 49-56.

<sup>20</sup> SARTORIS, Alberto, *Encyclopédie de l'architecture nouvelle, III. Ordre et climat Américains*, Milan, Ulrico Hoepli, 1957, pp. 26-27.



Reyner Banham as an inhabitant of the “environmental bubble,” published in the magazine *Art in America*, April 1965.

regulation developed in Latin America and incorporated some of them to his own technical and formal repertoire. In addition to his construction projects in the tropical climate of Costa Rica, Neutra would have a strong impact on the debate about the physiological, psychological and cultural dimensions of the climate determinism that nurtured his concept of “biorealism” in architecture and his book *Survival through Design* (1954).

The brothers Victor and Aladar Olgyay deserve special mention. Their *Design with Climate: A Bioclimatic Approach to Architectural Regionalism* (1963) is influential to this day. The title denotes that, even though it is a practical manual, the book aspired to be a cultural proposal in the historical context in which it was written. At the behest of their fellow national Breuer they emigrated from Hungary to the United States of America in 1947 with the idea of developing and academically installing a new bioclimatic approach. Daniel A. Barber recently studied their intense activity: far from devoting themselves to an eccentric concern, the brothers delved into research on the climate question both in academic circles (MIT, Princeton) and in the institutional and business fields.<sup>21</sup> It is equally true, though, that their vindication of climate adaptation in the genealogy of modern architecture coincided with the generalized success of air conditioning, but contrasted even more harshly with the advent of speculative approaches of the formalist type. This is clearly illustrated in Peter Eisenman's doctoral thesis *The Formal Basis of Modern Architecture* (1962).

### Global Arcades and Urban Horticulture

The fact that the boom of the historiographic tradition of formalism in the 1960s laid the foundations for post-modernism was not at the expense either of the vernacular turn marked by Bernard Rudofsky's book of the exhibition *Architecture Without Architects* (MoMA, 1964) or of the emerging environmental history, one of whose main supporters was historian and critic Reynier Banham. On the basis of the paradigm of the machine in the genealogy of modern architecture, in the mid-1960s he undertook the task of tracing the origin and the evolution of those very same architectures as devices of climate control. This is a topic that Giedion had ignored in his work *Mechanization Takes Command* (1948). Banham's work resulted in the publication of *The Architecture of the Well-tempered Environment* in 1969, documenting that awareness of the use of energy and the environment was the

<sup>21</sup> BARBER, Daniel A., “Lessons from *Lessons from Modernism*,” in: BONE, Kevin, *Lessons from Modernism. Environmental Design Strategies in Architecture, 1925-1970*, New York, Monacelli Press, 2014, pp. 188-195.

consequence of a cultural, ecologic and political crisis prior to the oil crisis in 1973. The frenzied degradation of the environment and the threat of atomic destruction could not go without consequences. Banham contributed to this phenomenon by challenging the notion of architecture, including that of the various regionalistic appeals, as illustrated by the “environmental bubble” that he conceived together with François Dallegret for the article “A Home Is Not a House” (*Art in America*, 1965). His “home” consisted of a portable, mechanical device “for a high standard of living” equipped with a solar energy collector, video and sound players, a kitchen and a refrigerator. Most importantly, the house supplied its inhabitants (a naked Banham can be recognized in the drawings) with air conditioning that generated a “well-tempered” environment and, if necessary, inflated and sustained a double-membrane pneumatic bubble. By renouncing the monumental framework of architecture, technology allowed humans to impose their will anywhere, enjoying the freedom of space of a nomad.

This version of the “machine for living” presented by Banham inevitably leads to the continuation of the evolutionary process described by Behne in his *Der moderne Zweckbau (The Modern Functional Building, 1926)* – to wit, the transition from the house to the “geformter Raum” (shaped space) and from shaped space to the “gestaltete Wirklichkeit” (designed reality). It is even closer to the ideas presented by Siegfried Ebeling in his book *Der Raum als Membran (Space as Membrane)*, published in Dessau in 1926. The book described an architecture of the future which biological substantiation was no longer that of an object but rather of an existential state – an idea inspired both by Friedrich Nietzsche’s vitalist philosophy and by the reformist theories of biologist Raoul Francé. What had been the “house” would become a mere space connected to the ground and defined by thin, permeable to light surfaces – hardly a neutral membrane between the inhabitant and the exterior. In Ebeling’s opinion, this transformation entailed a symbolic erosion of architecture as the distinction between Heim (home) and Haus (house) was dissolved. If what propelled this transformation was technical in nature, it also encouraged a search for meaning in ecological and ontological terms.<sup>22</sup> Therefore, Fritz Neumeier was right when he related the ideas of Ebeling with the designs of Buckminster Fuller or Frei Otto which had inspired Banham’s bubble.<sup>25</sup>

Gropius stated that modern architecture was characterized by claims of a “total scope,” which begs the question of the extent to which the connection between the views of the 1920s and 1960s – beyond the merely technological – had a correlation in the cultural lifestyle. At first sight, pop consumerism and hippie counterculture – present in Banham’s proposals concurrently with Archigram’s projects and the Drop City in Colorado – seem to be very detached from hygienist concerns and from the social model of working class neighborhoods in the inter-war period. Let us bear in mind that these latter were created at the time of various reformist movements – the solarium responded both to the heliotherapeutical prescriptions and to the social redemption promises of naturism, to give but one example. This also applies to the urban green designed by Gropius in between the solar blocks in 1929. The figure of landscape architect Leberecht Migge is particularly revealing. He has been rightly dubbed as the father of “green modernism.”<sup>24</sup>

Migge not only designed the green areas of the best known *Siedlungen* of the Weimar Republic in Berlin and Frankfurt. He was, above all, an intellectual committed to what is today called the ‘sustainable’ development of the big city as related to the surrounding territory.<sup>25</sup> He considered the periphery as one of the definitive values of a *Weltstadt* (global metropolis) like Berlin and one of the leading potential drivers for the establishment of the modern ‘sporting’ lifestyle, for example in permanent colonies of horticultural gardens, where green will generate resources rather than deplete them – even in terms of the recovery of the soil.<sup>26</sup> Thus, in addition to consuming goods, the modern urbanite would produce them. Consistently with the

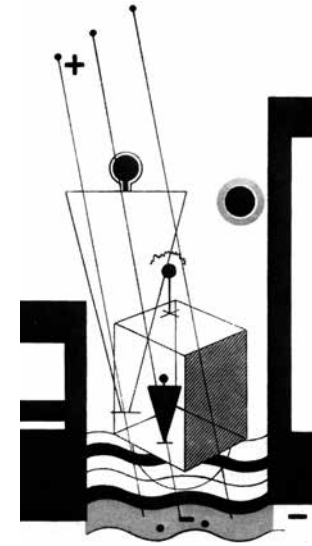
22 For more information on the ecological scope of Ebeling’s ideas, see: SCHEIFFELE, Walter, “Membrane and Ecological Architecture,” in: EBELING, Siegfried, *Space as Membrane*, ed. SCHOFERT, Anna Kathryn and JOHNSTON, Pamela, London, Architectural Association Publications, 2010, pp. I-XI.

23 NEUMEYER, Fritz, *Mies van der Rohe. Das kunstlose Wort*, Berlin, Siedler Verlag, 1986, pp. 225.

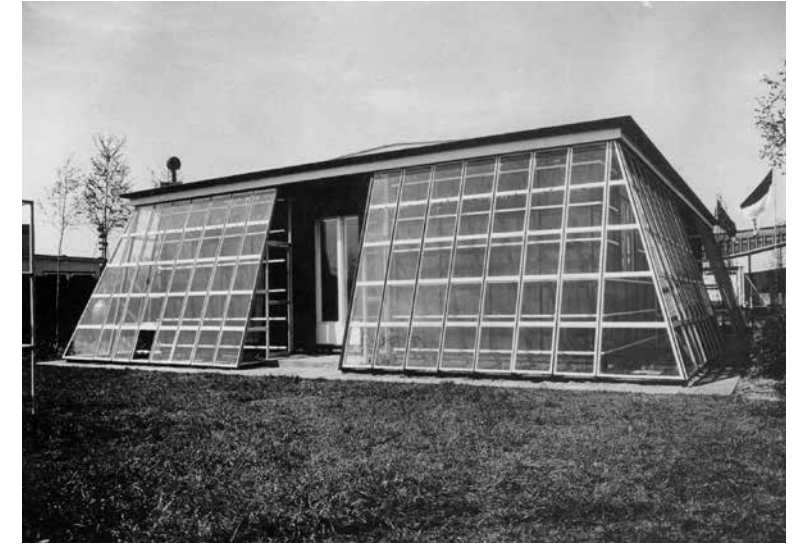
24 HANEY, David, *When Modern was Green. Life and Work of Landscape Architect Leberecht Migge*, London/New York, Routledge, 2010.

25 See: AAVV, *Leberecht Migge, 1881-1935. Gartenkultur des 20. Jahrhunderts*, Worpswede 1981

26 MIGGE, Leberecht, “Weltstadt-Grün. Ein Aufruf zur rentablen Parkpolitik,” in: *Wasmuths Monatshefte für Baukunst - Städtebau*, 1930, no. 5, pp. 241-248.



The ecological house between membranes, according to Siegfried Ebeling’s *Der Raum als Membran*, Dessau 1926.



Martin Wagner: prototype of the growing house at the exhibition “Sonne, Luft und Haus für Alle” (Sun, Light and Housing for Everyone) in Berlin 1932.

above, the modern rooms proposed by Migge were “machines for living” in the literal sense of their productive function. Their greenhouses were not only winter gardens – they turned solar energy into growth to make self-sufficiency possible through urban crops.<sup>27</sup> Martin Wagner exemplified this in his project for the *wachsendes Haus* (growing house) presented at the exhibition “Sonne, Luft und Haus für Alle” (Sun, Light and Housing for Everyone, Berlin 1932). Adolf Loos, another faithful follower of Migge, in 1927 referred to his theories when in his article “Die moderne Siedlung” he stated that modern colonists no longer depended on the soil and the climate, but rather that they built them themselves with architectural elements such as walls. They were arranged in an east-west direction, projecting to the exterior, creating a shaded area and protecting against the wind. A microclimate was created with the heat and humidity necessary to guarantee the productivity of orchards.<sup>28</sup> The modern house would be precisely that – a carefully calibrated technical and productive architectural device to meet unavoidable biological requirements.

One peculiar interpretation of this concept was the one presented by Ralph Erskine at the 1959 CIAM in Otterlo (the Netherlands). When presenting his ideas about the “sub-arctic habitat,” he remarked the fabulous growth of fruit and vegetables in the Nordic greenhouses thanks to the 24 hours of sunlight during the summer.<sup>29</sup> He also remembered how, in his attempt to run away from the English conservatism of the 1930s, he had found a superficial “internationalism” in Sweden. But the isolation provoked by World War II favored a cultural introspection which, in his case, resulted in the search for an architecture that enabled modern lifestyles in an environment with a more appropriate climate. As regards housing and the city, he acknowledged the need to build interior worlds without hindering the valuable exposure to direct air and solar radiation in the summer that characterize Swedish culture. This led him to propose terraced areas with walk-on roofs and, at the same time, to reject – for psychological

27 As regards his interpretation in ecological terms of modern architectures as those of Le Corbusier or Bruno Taut, see: MIGGE, Leberecht, *Deutsche Binnenkolonisation – Sachgrundlagen des Siedlungswesens*, Berlin 1926. Reedited with the title *Der soziale Garten. Das grüne Manifest*, Berlin, Gebrüder Mann Verlag, 1999.

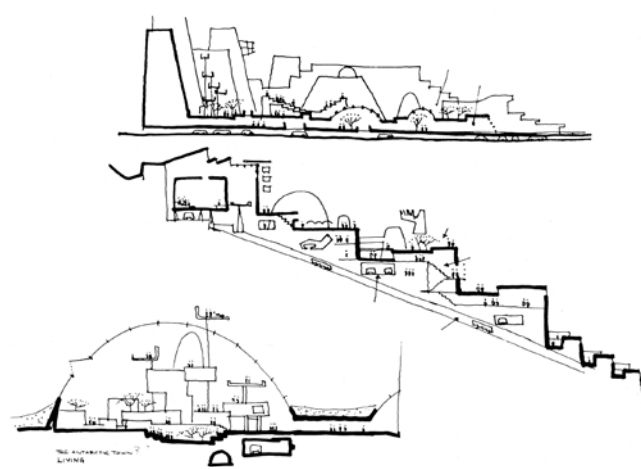
28 LOOS, Adolf, “Die moderne Siedlung,” in: *Der Sturm*, 1927, no. 11, pp. 161-176.

29 ERSKINE, Ralph, “The Sub-Arctic Habitat,” in: NEWMAN, Oscar, *CIAM '59 in Otterlo*, Stuttgart, Karl Krämer Verlag, 1961, p. 163.





"It's a pity our climate doesn't permit a functional architecture." Cartoon by Swedish architect Mats Erik Holander in the 1930s.



Interior worlds under terraces for the sub-arctic climate: proposal presented by Ralph Erskine at the CIAM in Otterlo, 1959.

reasons – the proposals to cover whole cities under climate bubbles. What was technically possible was not necessarily culturally desirable. Therefore, the climate determinism postulated by Erskine was critical of the technological optimism prevailing at the time which, at the CIAM in Otterlo, culminated in Kenzo Tange's praise of atomic energy. It could also be illustrated by Alison and Peter Smithson's position expressed shortly afterward about the climate concerns of the new Latin American architecture: "It is no good looking to the climate and the physical environment to give the form of the building. Technically, a glass box and a mass-concrete cave can produce the same comfort conditions, if one can afford the right mechanical equipment. It all depends what you are after. The shape of the culture can only be built up separate individual form-giving decisions towards a common ideal – however vague this ideal may seem at the present."<sup>30</sup>

The interior worlds of Erskine, however, refer us to the tradition of the commercial landscapes of Paris and London in the nineteenth century, interpreted by Walter Benjamin in his *Passagen-Werk (Arcades Project)*, written between 1927 and 1940) as paradigms of an urban behavior marked by the value of change, the fetish character of commodities and abstract relations. Urban nature sustained by an architectural device that blocks natural atmospheric factors, away from inclement weather, to generate a climate-neutral space that is neither socially indiscriminate nor culturally indifferent. It has been pointed out, for example, that in its condition as an architectural type the glass covered commercial arcade was not rid of the exotic connotations of the palmhouse and the eastern bazaar – connotations which, no doubt, promoted the contracultural absorption of Buckminster Fuller's technocratic views of the second half of the twentieth century. Such "domes" could also be interpreted as a return to the yearning of the period for interiority in the face of hostility in the world. In this sense it is remarkable that Fuller's renowned climate dome over New York would have been an immunological capsule – according to its author, the production cost would have been amortized by reducing the number of man hours lost due to colds and respiratory diseases.<sup>31</sup> Another reference to the nineteenth century is included in the ambiguous condition of an interior which, just like London's Crystal Palace of 1851, would have lacked the shade characteristic of an architectural space – an exterior quality that contributed to the objective of representing the World in the interior of the

30 SMITHSON, Alison and Peter, "The Function of Architecture in Cultures-in-Change," in *Architectural Design*, no. 4, April 1960, pp. 149-150.

31 McHALE, John, *Richard Buckminster Fuller*, Ravensburg, Otto Mayer Verlag, 1962, p. 33, note 102.



Interior of Richard Buckminster Fuller's *Climatron* at the botanical gardens in St. Louis, Missouri, 1960 (from John Mc Hale, *R. Buckminster Fuller*, New York 1962).

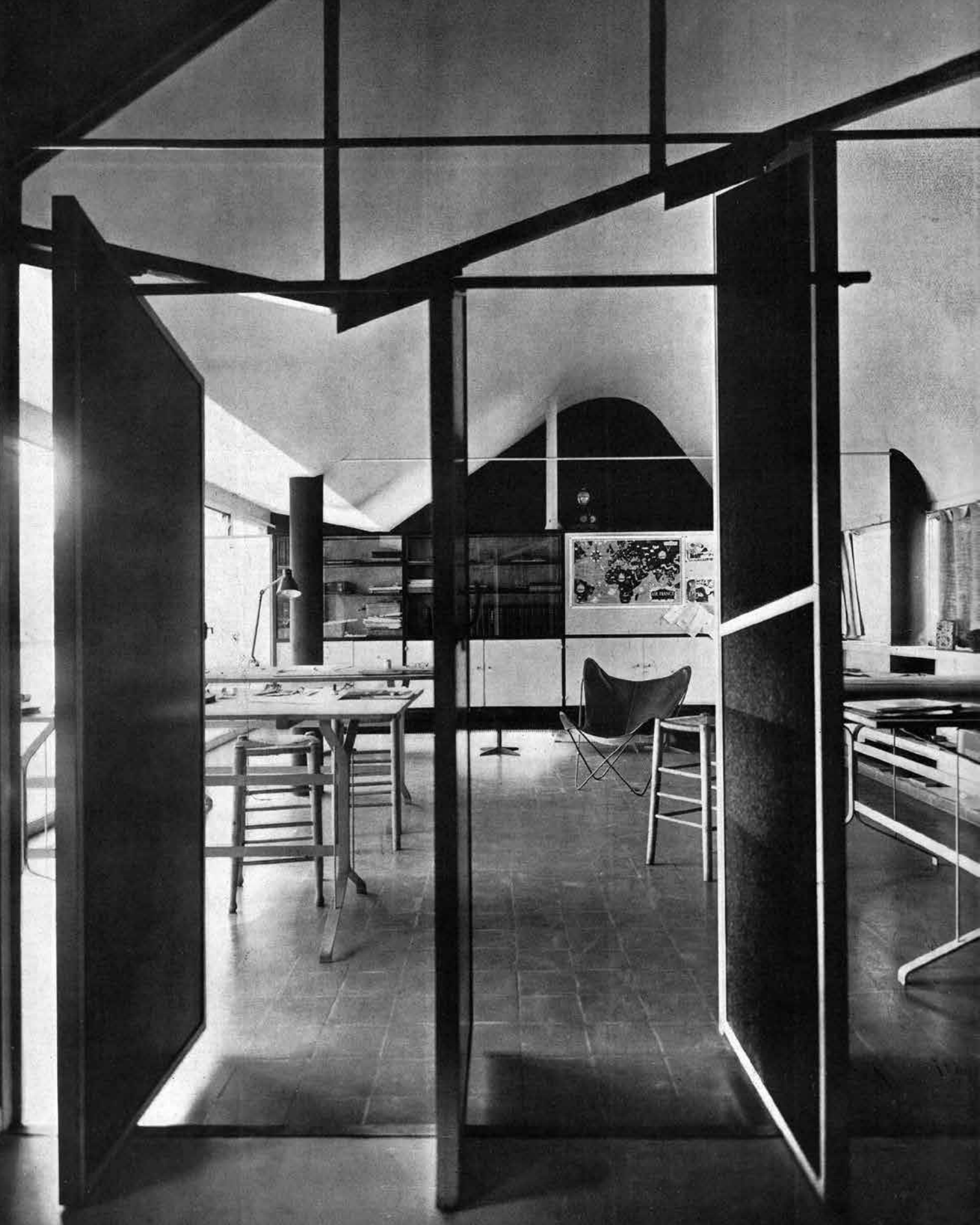
building at the first World Exhibition. Philosopher Peter Sloterdijk has pointed out the metaphorical value of the exteriors that can symbolize the contemporary capitalist World as a global arcade.<sup>32</sup> A World, otherwise fragmented and plural, represented *in vitro* in the climate-controlled arcades through which circulate the new "digital *flaneur*" described by Eduardo Prieto – rooms that may favor the illusion of public spaces but are almost always private machines of social control and exclusion.<sup>33</sup> Sloterdijk's prognosis is grim: air-conditioning is our destiny and will become the main object of political negotiation in the future.<sup>34</sup> There are other pronouncements that are even more alarming and predict that the current environmental crisis will lead to a dramatic struggle for survival in capsules of climate and economic well-being.<sup>35</sup> Do we have another option? An alternative would be that of those people who, paraphrasing Muthesius, do not choose the shelter of global arcades "devoid of an exterior side, as dreams" (Benjamin), but rather a rebellious encounter, active and productive, with the energy and material base of social lifestyles.

32 See in particular the third volume of his theory of the spheres: SLOTERDIJK, Peter, *Sphären III. Schäume*, Frankfurt on the Main, Suhrkamp, 2004.

33 PRIETO, Eduardo, *La arquitectura de la ciudad global. Redes, no-lugares, naturaleza*, Madrid, Editorial Biblioteca Nueva, 2011, pp. 197-227.

34 SLOTERDIJK, Peter, *Sphären II. Globen*, Frankfurt on the Main, Suhrkamp, 1999, pp. 1008-1011.

35 von BORRIES, Friedrich, *Klimakapseln. Überlebensbedingungen in der Katastrophe*, Frankfurt on the Main, Suhrkamp, 2000.



## I. FORM

JOAQUÍN MEDINA WARMBURG

*Buenos Aires 1939: The Climate Arguments of Modern Architecture*

MANFRED SPEIDEL

*Climate and the Biological Foundations of Culture.*

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*"The subject of architecture should be precisely that." Notes on the  
Definition of Form and the Influence of Climate on Architecture  
in the Work of Baliero and Katzenstein*

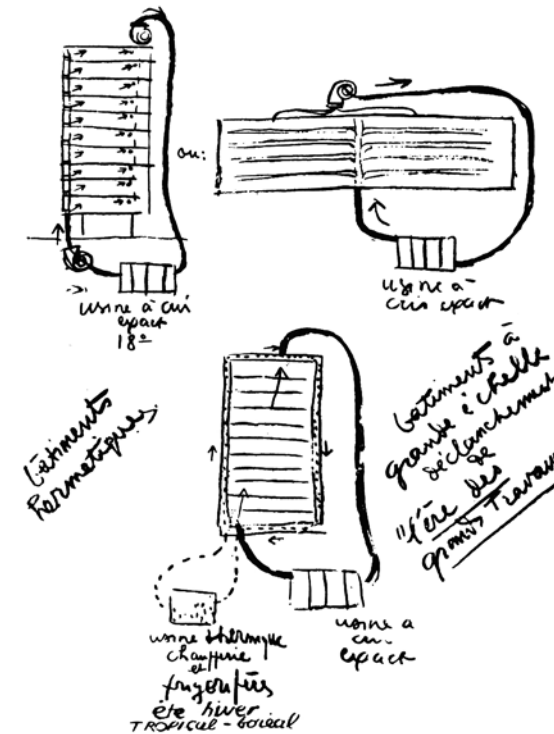
"Modern architecture should not dismiss one of the most valuable achievements in the history of architecture: light and shade." (*Austral*, 1939)

Interior of the House of Studios for Artists by Austral (Antonio Bonet, Horacio Vera Barros and Abel López), Buenos Aires 1938 (from: *Nuestra Arquitectura/Austral*, December 1939)

# BUENOS AIRES 1939: THE CLIMATE ARGUMENTS OF MODERN ARCHITECTURE

JOAQUÍN MEDINA WARMBURG

Joaquín Medina Warmburg studied architecture at Escuela Técnica Superior de Arquitectura in Sevilla and at Rheinisch-Westfälische Technische Hochschule Aachen (Germany). After lecturing in Aachen and Wuppertal since 1997, in 2005 he was appointed Professor of History of Architecture at Technische Universität Kaiserslautern. He has been visiting professor at various European and Latin American universities, such as Academie van Bouwkunst in Maastricht, Universidad de Alicante, the School of Architecture, Design and Urban Planning at Universidad de Buenos Aires or at Universidad Nacional de Rosario. Since 2011 he has headed the Walter Gropius Chair at DAAD in Universidad Torcuato Di Tella, Buenos Aires, and cooperated with different Argentine universities. His research work covers such fields as architecture and urban planning during the nineteenth and twentieth centuries, with a focus on the exchange phenomena that facilitated the internationalization of modern cultures, and also on the study of the origins and cultural implications of the environmental approach to architecture. Some of his books are *Projizierte Moderne. Deutschsprachige Architekten und Städtebauer in Spanien, 1918-1936* (2005), dedicated to cultural interference between Germany and Spain in the fields of modern architecture and urban planning, and *Sep Ruf, Kanzlerbungalow Bonn* (2009, with Andreas Schätzke).

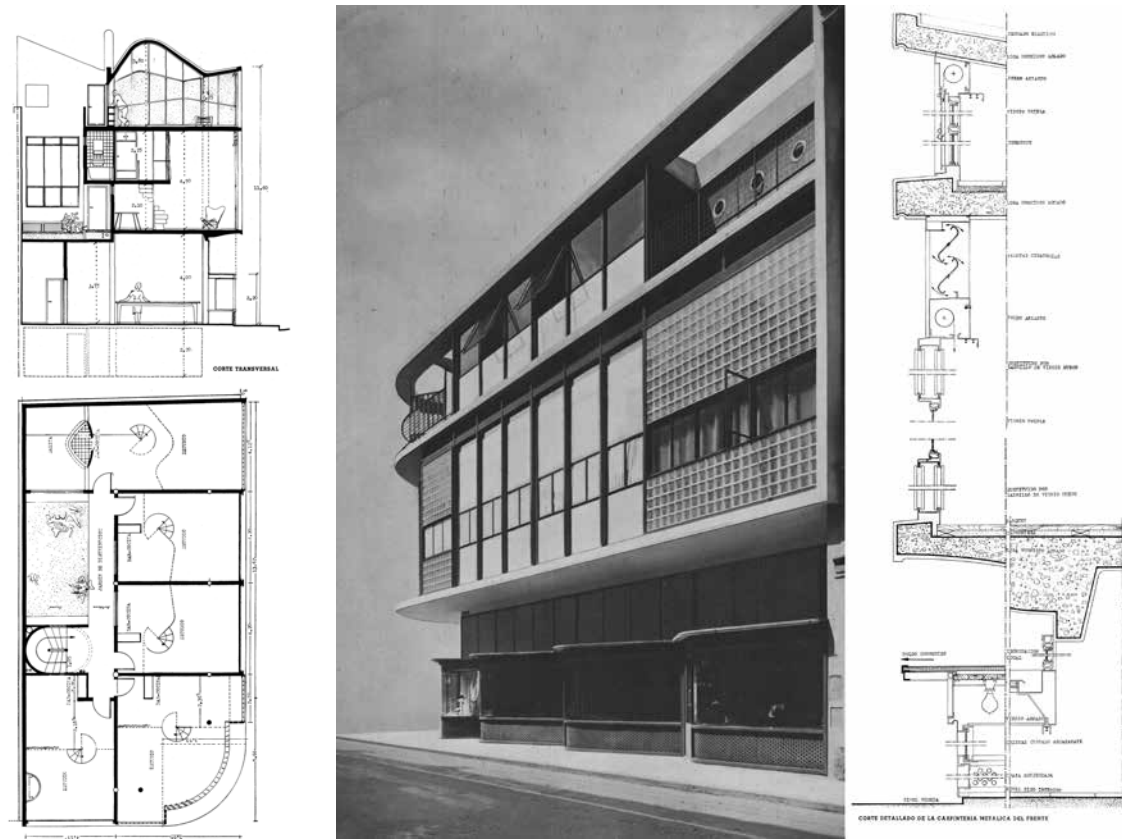


“Exact breathing” as explained by Le Corbusier in Buenos Aires in 1929. Published in *Précisions*, 1930.

For decades, modern architecture has been associated with the Utopian ideal of the universal ubiquity of new technical forms: an ‘International Style’ that, in its global propagation, was indifferent to climate considerations. This interpretation – considered to be a general condition of modernism – is today too simplistic and, thus, untenable. However, it is equally true that, in its time, it had renowned followers, such as Le Corbusier – at a given time and in a given place. It was in the second of ten conferences by Le Corbusier in Buenos Aires, in October 1929, that he most decidedly presented his climate model based on the centralized production and regulation of comfort conditions in interiors that are hermetically isolated from their surroundings. Contradicting the biological analogy suggested by the term “exact breathing,” coined by Le Corbusier himself, his proposal aimed at the fully mechanical climate control of artificial atmospheres. Therefore, thanks to the “international interpenetration of scientific techniques,” in the future there would be a single ubiquitous house for all countries and all climates: “The buildings of Russia, Paris, Suez or Buenos Aires, the steamer crossing the Equator, will be hermetically closed. In winter warmed, in summer cooled, which means that pure, controlled air at 18°C circulates within forever.”<sup>1</sup>

Probably in 1929 only a few of those present at the conferences could even envisage the extent to which the postulates of the French–Swiss architect were a premonition of the mechanical climate control that would prevail in the post-War decades; nor could they imagine their disastrous long-term environmental and architectural consequences. Likewise, faced with the ‘radiant’ view of the future presented by Le Corbusier in 1929, not many people must have felt the need to place their hopes in the fact that, hardly a decade later, modern architectural works in Buenos Aires, of all places, would exhibit a commendable wealth of nuances

<sup>1</sup> LE CORBUSIER, *Précisions. Respecto a un estado actual de la arquitectura y el urbanismo* (1930), Barcelona, Apóstrofe, 1999, p. 87. For further information about Le Corbusier’s conferences in Buenos Aires and how they were received, see: LIERNUR, Jorge Francisco and PSCHÉPIURCA, Pablo, *La red austral. Obras y proyectos de Le Corbusier y sus discípulos en la Argentina (1924-1965)*, Buenos Aires, Prometeo, 2008, pp. 119-146.



The "Casa de estudios para artistas" by Grupo Austral (Antonio Bonet, Horacio Vera Barros and Abel López), published in *Nuestra Arquitectura*, December 1939. Second floor plan and section, outside view and construction section of the façade.

as regards the climate, with architectural alternatives going beyond the mere neutralization of natural weather conditions. Well, that would precisely be the case. Toward the late 1930s in Buenos Aires, those who most diligently and sensibly promoted the renovation of architecture chose to design and build always respecting the different meaningful aspects of the modern, cultural constructions of climate. By way of example one could mention the positions defended in the writings and work of the members of the Grupo Austral and Wladimiro Acosta, which were chronicled in the *Nuestra Arquitectura* magazine in 1939.

### Austral: Breathing Membranes

In early 1939, the editors of *Nuestra Arquitectura* came to an agreement to publish supplements that would be the official publication of Grupo Austral. The group was organized by three former collaborators of Le Corbusier – Argentines Juan Kurchan and Jorge Ferrari Hardoy and Catalan Antonio Bonet –, who had settled down in Buenos Aires in 1938 and were firmly committed to the new architecture. The *Austral* supplements were published starting in the winter of 1939. The third and last issue of *Austral*, published in the summer (December 1939) presented the first programmatic work of the group, conceived by its chairman, Antonio Bonet, together with Horacio Vera Barros and Abel López. In his presentation of the "House of studios for artists in Buenos Aires," critic Hylton Scott praised the experimental nature of the house that was dry-built with industrial materials, and declared it to be similar to the work of Le

Corbusier.<sup>2</sup> As a former collaborator of Le Corbusier, no doubt Bonet was faithful to his master's postulates. However, as regards climate criteria, the house of studios for artists in Buenos Aires interpreted the concept of 'breathing' in a unique way.

It must be clarified that the only arguments explicitly related to climate that were presented in the *Austral* supplements corresponded to a rural housing plan that was adequate for the climates of warm, temperate and cold regions. The proposition was to include open, shaded, spaces for warm regions and patios as an essential element in temperate zones.<sup>3</sup> Descriptions of these types incorporated wind maps and solar diagrams corresponding to the respective latitudes. At first sight, such propositions do not seem to be in keeping directly with the urban context and the mixed usage (business premises and studios-apartments) characteristic of a building erected in a corner lot in downtown Buenos Aires. However, far from opting for an airtight *boîte en l'air*, the "house of studios for artists" adopted a typological solution that might be interpreted as the transformation of the traditional patio-house that they postulated as an essential element in temperate zones. The patio-house is erected over a base of business premises that aesthetically underscore their autonomy by means of a wavy glass façade. Inside the building there is a garden patio around which the house is organized, for circulation and access to the studios. Studios have double-height ceilings with a mezzanine (the "bedroom") and offer the possibility of transverse ventilation between the cold, green, shaded patio and the heat out in the street. The basic typology of the building is that of a climate device that works by convection.

In the same way as Le Corbusier's 'exact breathing' was based on the existence of a centralized climate infrastructure, in the case of the house of studios such devices were restricted not only to the centralized supply of cold for the conservation of food (cooling cabinets, which were common in Buenos Aires at the time, as evidenced by ads on the pages of *Nuestra Arquitectura*) but also to the centralized heating radiator system. In both cases, devices were used as furniture, for example, by mounting radiators under sets of shelves that act as space separators on the upper floor. The façade – in which only the vacuum-packed glass blocks could be reminiscent of Le Corbusier's 'neutralizing' double membrane – was defined as the regulating limit for air flow and insolation. As explained in Hylton Scott's presentation, the building's siding was made of various dry-mounted industrial production materials, with a metal-profile structure and several transparent, translucent and opaque planes with different insulating qualities. As a whole, the regulating condition of the light façade lay in how it could be adapted by opening or closing some of the planes, and in complementary mechanical elements such as asbestos awnings – which could ingeniously be unrolled even when the tilt windows with sliding axes were open – or rotary pallets that made it possible to adjust the evacuation of ascending warm air through the horizontal openings high on the façade, in front of the double-height spaces. The already mentioned third issue of *Austral* included construction details of a complete cross section of the building's façade. A two-page spread read, in capital letters: "MODERN ARCHITECTURE SHOULD NOT DISMISS ONE OF THE MOST VALUABLE ACHIEVEMENTS IN THE HISTORY OF ARCHITECTURE: LIGHT AND SHADE."

The industrial assembly of the façade responds to the notion of architecture as an artifact that can be transformed and climate-adapted in its perimeter limit. This is evident also in spaces that are assigned to light or shade, as protagonists of a modern life style. Take as an example the garden-terrace as a solarium and, more significantly, consider the domestic *umbráculo*: an open 'shadowroom' as a temperate counterpart to the sunroom of the conservatory typical of cold regions and the winter gardens of central-European modern architecture. This no doubt occupies a place of privilege in the building: the double-height space at the very corner, as an urban loggia, balcony or viewpoint, looking to the northeast and, therefore, more exposed to the rigors of the subtropical sun. The element that determines its condition as an adjustable *umbráculo* is the parasol made of vertical movable louvers. It goes beyond the brise soleil as

2 HYLTON SCOTT, Walter, "Casa de estudios para artistas en Buenos Aires," in *Nuestra Arquitectura*, *Austral* supplement no. 3, December 1939.

3 "Anteproyecto para viviendas rurales," in *Nuestra Arquitectura*, *Austral* supplement no. 2, September 1939.





Open loggia with movable vertical louvers, BKF chair and radiator. Photograph published in *Nuestra Arquitectura/Austral*, December 1939.

presented by Le Corbusier, inasmuch as it also acts as closure: in addition to protecting against the sun and maybe even against unwanted looks, it also offers sound and thermal insulation by means of an agglomerated cork filling in its inner face. The airtight closure is more improbable, but the photographs published in *Austral* show that it was a space that included heating radiators. In contradiction with the climate-control infrastructure, this is clearly a space conceived in terms of continuity between the interior and the exterior, which is also the continuity between masses of air. Just as in the rural houses designed by the members of Austral for warm regions, an elevated space was created which was “open to the winds and eternally in the shade.”<sup>4</sup> The ambiguity of the exposed interior which, in turn, is a protected exterior was reinforced by the objects presented in the photograph published in *Austral*: an easel to practice painting, a rowing machine for physical training, the same chair that can be seen in the garden terrace and, above all, the famous BKF chair designed by Bonet, Kurchan and Ferrari as a versatile accessory – halfway between a hammock and an armchair – for their own studios in this building. Under the light that filters in from the street, the artistic and sports attributes, with their light appearance, represent the stage for the urban way of life characteristic of modern times: together with the explanations related to materials, *Austral* reproduced the image of a Zeppelin cabin, calling it a “resolved interior piece of equipment – architecture still does not have the means to arrive at this type of solutions.” Is this the acknowledgment of an aspiration unfulfilled because of the impossibility of creating an architecture that is analogous to the climate-controlled naves that Le Corbusier had spoken about in 1929? Could it be that – even if they had wanted to – they would have lacked the technical means necessary to produce a modern ‘exact breathing’ machine? Coinciding with the *Austral* supplement that presented the house of studios building, *Nuestra Arquitectura*'s last anonymous article in the December 1939 issue was dedicated to “Air conditioning” and reviewed its history dating back to its origins in constructions in ancient Egypt.<sup>5</sup> Furthermore, it underscored its ‘natural qualities’ with the example of the resourceful bees and the ventilation of their beehives, and highlighted its recent, certainly amazing applications in medicine, such as mechanically-assisted breathing with “iron lungs.” The article ended by quoting the General Electric Company and its promise of interiors that are healthier and more comfortable for human life. Advertisements in *Nuestra Arquitectura* prove that their use in households was

4 “Anteproyectos para viviendas rurales. Zona templada,” in *Nuestra Arquitectura, Austral* supplement no. 2, September 1939.

5 “Acondicionamiento de aire,” in *Nuestra Arquitectura*, December 1939, pp. 327-332



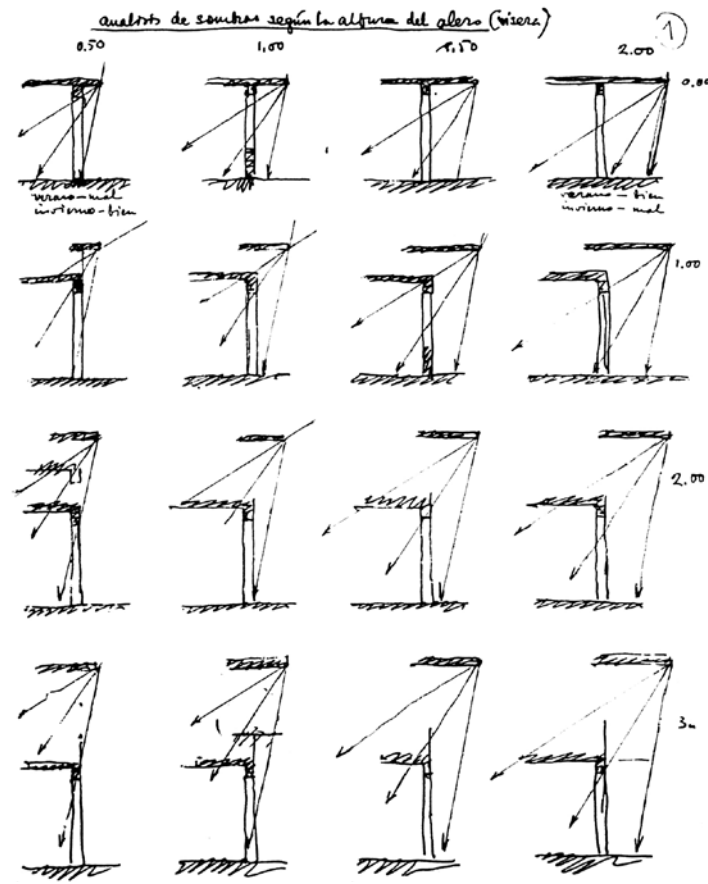
Façade of the “Casa en Villa del Parque” by Wladimiro Acosta, according to the “Helios System.” Photographed by Manuel Gómez and published on the cover of *Nuestra Arquitectura* in September 1939.

now an actual possibility: ads related to technical home appliances included the most varied heating and refrigeration systems, gas or electric. They were almost always centralized and, therefore, architects were responsible for them, including the air conditioning facilities offered by the Carrier Corporation in Buenos Aires. Three decades after the invention of air conditioning equipments by engineer Wallis Carrier, the advertising slogans included in the December 1939 issue of *Nuestra Arquitectura* referred to an “ideal climate for everybody,” that was to be found “in all modern construction projects”: “If it's not ‘Carrier,’ it is not ‘Ideal Climate.’” Time seems to have proved them right, since nowadays the façade of the house of studios of the Austral group has nine individual pieces of air conditioning equipment – at a time when standards of comfort are driven by the possibilities of technical climate control with cheap energy, in spite of its limited availability. This was a failure across the whole line, after, at least for a while, the building breathed in its façade by specific architectural means, creating the scenario and climate environment that was consistent with the new ways of the urban life it proposed.

### Helios: Radiant Volumes

The last issue of *Austral* showed an exemplary architecture of mechanically adaptable façades capable of regulating sunlight and air convection. However, hardly a few months before, *Nuestra Arquitectura* had presented an alternative proposal to the treatment of the climate with architectural means, through the concept of thermal radiation. This is what was proposed by a one-family house designed by architect Wladimiro Acosta (1900–1967) and built in Villa del Parque, a neighborhood of Buenos Aires.<sup>6</sup> The two-story building is an artistic set of empty and full cubic spaces – chief among them stand out some elements with a constructive and composition entity of their own, such as an overhanging roof and window openings of careful proportions. This architecture initially reminds us of Parisian villas by Le Corbusier, in his purist years. However, what prevails is a feeling of surprise generated by the hypertrophy of an element around which the rest of the house is lineally organized: a considerably deep, large porch at the front, apparently with no function other than to frame the complete main façade. Quite the contrary; this is a precise composition of volumes that cast previously calculated shadows: far from being a whimsical monumental formalism, the porch-overhanging roof is a fixed climate-control device facing north-east, the

6 ACOSTA, Wladimiro, “Vivenda tipo ‘Helios’ en Villa del Parque,” in *Nuestra Arquitectura*, no. 9, September 1939, pp. 296-304.



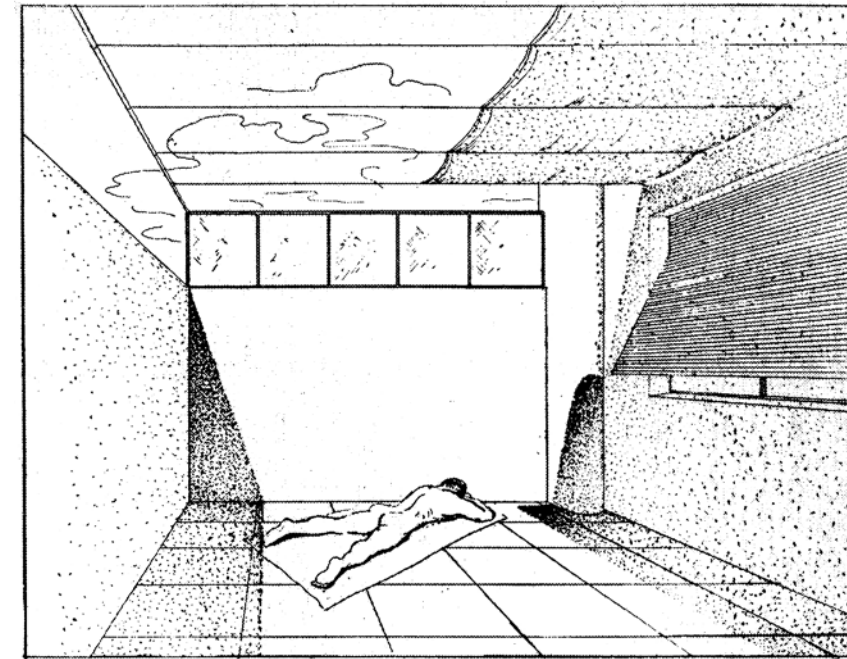
Study of shadows in winter and summer for several sections of overhanging roofs constructed according to the "Helios System" by Acosta in his book *Arquitectura y Clima*, Buenos Aires 1976.

one with the highest solar radiation incidence. The function of this *losa-visera* (slab-hood, to use Acosta's terminology) is not only to keep direct sunlight out of the interior in the summer, but also to generate a shaded area in front of the façade, thus avoiding the appearance of what Acosta would later call a "thermal aura." With this expression he made reference to the layer of warm air that the building creates around it. The architectural measures that Acosta chose – both in this and other buildings that he had been designing since 1932 according to the "Helios System" – attempt to prevent the air from the "thermal aura" from gaining access to the interior, by convection, thus negatively conditioning its climate.

A review of Acosta's climate-related writings points out to the hierarchy that was established among the three possible means of thermal transfer (conduction, convection, radiation); with priority being given to radiation phenomena (that is, to the transmission of energy by electromagnetic waves) while dismissing the role of convection (that is, the transmission of energy by fluids).<sup>7</sup> He repeatedly justified it by citing physiological arguments consistent with his own notion of modern housing as a biological phenomenon. For example, he referred to studies that underscored the greater weight of radiation in the body's thermal regulation processes.<sup>8</sup> In line with this, Acosta assigned priority to temperature differences between the body and the surrounding solid surfaces, inasmuch as they were determining factors for the sensation of thermal comfort. One can feel cold with the air at 30° C if the walls are at 10° C, in the same way as one

7 For more details refer to his posthumous work: ACOSTA, Wladimiro, *Vivienda y clima*, Buenos Aires 1976/1982.

8 Acosta refers to different authors, for example, to renowned hygienists such as Max von Pettenkofer, from Germany, or Jules Arnould, from France, to bioclimatologist and Director for National Climatology Walter Knoche and geophysicist Wladimir Borzacoff, among others.



Sun bathing at the solarium of a house by Acosta in Belgrano, Buenos Aires, in 1932. Published in his book *Arquitectura y Ciudad*, 1935.

can feel hot in spite of below-zero temperatures if you are exposed to solar radiation. Consequently, in order to control the climate in interiors in the winter, Acosta opted for low-temperature underfloor heating, explicitly rejecting the use of the wrongly called "radiators," which actually operate by convection thus creating unhealthy air flows with suspended dust and soot.

Acosta's architecture responds to physiological preferences, from the artistic and the technological points of view. Massive bodies are characteristic of those who take into consideration their thermal inertia, and they create an unchangeable architecture of 'deep' solid objects with radiating surfaces, preferably made of concrete, plaster, stone and specifically metal. Although both were located in the same climate with the same orientation, Acosta's building is the antithesis of Austral's "house of studios for artists," with its heterogeneous mounting of light louvers and profiles with movable elements for solar protection, which are characteristic of his architecture. Conversely, the exterior awnings and curtains that protect the terraces and solariums in Acosta's houses are textile accessories, and not specific architectural elements. In his opinion, the *brise-soleil* was an element that was "rough and deformed the building."<sup>9</sup> The affinity is actually noticeable at the level of programs, of their reformist objectives, of the ways of life for which they expect to serve as a scenario. It is worth noting that, already in 1927 during his Berlin period, Acosta had proclaimed the exemplary nature of new engineering works, such as ocean liners or railway cars. He presented this argument in the Berliner magazine *Wasmuths Monatshefte für Baukunst* where, just like a nine-point constructivist manifesto, he published the records of a house designed following those references, which already included an ample solarium.<sup>10</sup> This was a modern element – almost commonplace by then – that was present in Le Corbusier's houses in Stuttgart's Weissenhofsiedlung, published in the same issue of the magazine and criticized by editor Leo Adler for their lack of climate adaptability.<sup>11</sup> In the same article, Adler reproached Acosta (still using his original name Konstantinovsky) in the sense that the

9 ACOSTA, W., *Vivienda y clima*, op. cit., p. 22.

10 KONSTANTINOWSKY, Wladimir, "Wohnhaus eines Architekten," in *Wasmuths Monatshefte für Baukunst*, 1927, no. 10, September 10, pp. 414-415.

11 ADLER, Leo, "Modernistisches aus Italien, Stuttgart und so weiter," in *Wasmuths Monatshefte für Baukunst*, 1927, no. 10, pp. 402-406.

purported constructive objectivity (*Sachlichkeit*) of his project was far from that of an engineer not interested in aesthetic considerations.

The sheer objectivity of Acosta's postulates has also been called to question by other authors. Jorge Francisco Liernur has pointed out the expressionist reminiscences of Acosta's theoretical assumptions about light – a central topic in the work of brothers Hans and Wassili Luckhardt in the years immediately preceding their collaboration with Acosta in Berlin.<sup>12</sup> Certainly, if – as regards light – modern architecture took root in an 'illuminist' rationality, it did the same thing in the case of climate Utopias like the ones in the romantic tradition. Let us consider for example the orientalist idea of German Expressionism and its recurring redeeming motto: *ex oriente lux*. Or let us consider the way in which Sigfried Giedion's formula "sun, air and light" of *Befreites Wohnen* (liberated dwelling, 1929) was preceded by the somatic redemptions of naturism and heliotherapy which, in their connection to hygienist theories or eugenics, were a major influence on several architectural and urban views related to the social projects of a 'life reform' (*Lebensreform*) in Germany in the early decades of the twentieth century. The interesting point to underscore, for instance, is the way in which heliotherapy or hygienist theories continued to be consistent with the new social way of life. In other words: to consider that the relationship between modern architecture and climate participated in broad cultural constructions which, in turn, endowed them with social meaning.

Having mentioned this exception, toward 1923 there was a *speculating* turn toward objectivity, which had clear, formal consequences. But far from becoming obsolete and disappearing, many of the 'old' topics simply continued to be treated with a change in discourse register. There are multiple roads that lead from a redeeming, messianic, mysticism of art to biologist or productivist scientificism. Conversely, there were also transfers from sciences to art, especially as illustrated by the scientific and pseudo-scientific attempts to transfer Albert Einstein's theories from physics to architecture – not only regarding the various speculations about four-dimensional space and time in the new architecture but also the laws that govern the relationship between mass and energy. One of the latter theories is the one presented in 1926 by Dutch architects Jan Duiker and Bernard Bijvoet, who designed the Zonnestraal (sun ray) sanitarium.<sup>13</sup> Their attempt to promote in architecture the notion of mass understood no longer as an inert solid, but as a geometric system of particles stressed by their respective gravitational fields, is not far removed from Acosta's bioclimatic predilection for the energy radiated by bodies via electromagnetic waves. In short, Acosta's radiant architecture is consistent with his often-proclaimed commitment to the scientific and social forefront of his time.

### Cultural Technique and Technical Culture

That very same year, 1939, the December issue of *Nuestra Arquitectura* that included the publication of Austral's "house of studios for artists" reported on the premature passing of Bruno Taut in Turkey.<sup>14</sup> The corresponding biographical note mentioned his stay in Japan, and pointed out that he had produced no work during that period. This erroneous statement today seems suggestive as regards the topic at hand, since Taut's very few projects in Japan were in many ways similar to Acosta's climate approach and architectural solutions in Buenos Aires.

As regards form, overhanging roofs in Taut's proposals also allowed him to "break the box" (to appropriate the expression by Frank Lloyd Wright, who loved and studied Japanese culture) of modern architecture in the desire to adapt it to the specific climate conditions of Japan. As pointed out by Manfred Speidel, Taut thus complied with the climate control program that had been formulated already in 1929 by dealing with the topic of the "internationality" of the new architecture, which was supposed to break the chains of

12 LIERNUR, Jorge Francisco, "Wladimiro Acosta y el expresionismo alemán. Consideraciones acerca de los fundamentos ideológicos del sistema Helios," in: *Wladimiro Acosta, 1900-1967*, Pamplona, T6 Ediciones, 2007, pp. 31-64, originally published in the catalog *Wladimiro Acosta, 1900-1967*, Buenos Aires 1987.

13 Refer to Jan Molema's essay included in this volume.

14 "Fallecimiento de Bruno Taut," in *Nuestra Arquitectura*, December 1939, no. 12, p. 210

formalism to lead to the fundamental origins of a "healthy and natural construction process."<sup>15</sup> In Taut's opinion, Europe had to atone for its guilt. Once in Japan, he took on this liberating mission by devoting himself to the study of the forms of traditional living and their relation with the climatically active elements that make up a Japanese house, from the inhabitants' clothing to the paper walls and to climate control appliances, such as heaters. Taut's overhanging roofs were born out of his cultural appreciation of architecture, not out of a mere hygienist empiricism. But Acosta's approach was not so reductive, either. In fact, his cultural dilemma was, to a large extent, analogous to that of Taut's, as evidenced by Acosta's first sentences in his 1939 article in *Nuestra Arquitectura*: "The characteristic architectural setup of local, contemporary buildings – plain, perfectly flat façades, big windows – actually represents an assimilation of the forms created by modern architecture in Central and Northern Europe; that is, of an architecture created for different soil and weather conditions. That is where its vulnerable point is found. (...) Actually, our buildings should adapt themselves to local geo-meteorological conditions to the same extent that the European model adapts itself to the conditions of those regions. Otherwise, whatever the artistic or technical progress, it will never be anything more than an imitation of authentic modern architecture."<sup>16</sup>

As far as Acosta is concerned, this signaled a return to the origins of 'indigenous housing' in search of cultural authenticity. As a result, he took up the climate awareness of colonial architecture, with thick adobe walls, galleries for protection from the sun and windows with bars and shutters. The result was functional buildings that were perfectly adapted to local conditions, with an interior climate that "attained a high level of comfort and well-being that no 'air conditioner' could replicate."<sup>17</sup>

In Acosta's opinion, the sensitivity of the climate issue was consistent with his experience as an emigrant for whom the empiric confirmation of differences coincided with a new beginning and adaptation to a new culture. But in Taut's case we already saw that emigration allowed him the possibility of fulfilling a cultural program that had been formulated before, so that we can ask ourselves how much the Helios System owed to the mystic light of German expressionism and how much it inherited from the scientific studies of light conducted in Russia.<sup>18</sup> In the same way, verification is required in the case of Bonet as to whether his climate-oriented architecture was evident before he emigrated and before he became the head of Austral. When still a student, he had participated in the fourth CIAM of 1935 on board the *Patris II*, where the idealization of vernacular Mediterranean traditions nurtured by the members of GATEPAC (the Spanish chapter of CIRPAC) was confirmed, as illustrated by the magazine *AC – documentos de actividad contemporánea*. That is where he published his travel chronicles, which read: "The architecture of the Greek coast and archipelago islands is similar to the one found in Ibiza and Menorca, with towns that are painted with lime, in white or pale colors and with flat or vaulted roofs. This is an architecture that could well be considered as modern in spirit, a continuation of the same forms that have been repeated for centuries in most of the coast and in all the islands of the Latin sea."<sup>19</sup>

In *AC* we find that both the precedent of a "rapid procedure to determine the characteristics of solar light,"<sup>20</sup> with the corresponding solar diagrams, and the manifesto "Mediterranean roots of modern architecture," where – in view of a Mediterranean popular architecture that is determined by climate and fully natural and utilitarian, that "radiates light" – the possibility of a "Nordic" or "Germanic" genealogy was brought to question, relegating its influence to merely technical details. The modern way of life – outdoors in the sun, breathing fresh air – is evidence of the above: "They imported cactus plants into

15 TAUT, Bruno, *Die neue Baukunst in Europa und Amerika*, Stuttgart 1929, p. 67. Refer to Manfred Speidel's essay included in this volume.

16 ACOSTA, W., "Vivienda tipo 'Helios' en Villa del Parque," op. cit., p. 303.

17 ACOSTA, W., *Vivienda y clima*, op. cit., pp. 15-16, 141-144.

18 Refer to Ivan Nevzgodin's essay included in this volume.

19 "The Fourth Congress of CIRPAC," in the eleventh issue of *AC*, 1933, pp. 12-18.

20 "Soleamiento de las construcciones," in *AC*, no. 8, 1932, pp. 36-39.



"Will and Action": Ibiza and Japan in Austral's manifesto "Will and Action" from July 1936. Images taken from the Spanish magazine *AC - Documentos de Actividad Contemporánea* (1935) and Bruno Taut's *Houses and People of Japan* (1937).

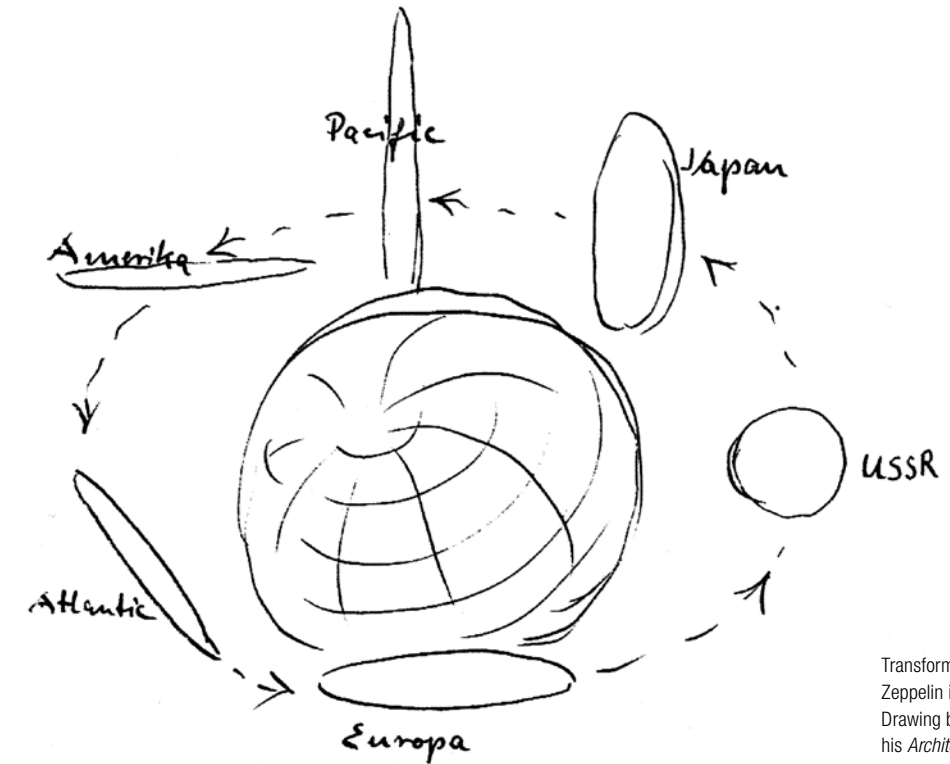
their country and planted them between large glass surfaces, protected by a heating installation... Modern architecture, technically speaking, is mostly a discovery of Nordic countries; but spiritually speaking it is Mediterranean architecture, devoid of style, that influences the new architecture.<sup>21</sup> The climate argument was gradually implemented with chauvinistic overtones in the justification of the identity of architectural choices, overlooking precisely the 'Nordic' and 'German' foundation of its idealization of the south, particularly the climate-related and cultural desires of the Romantic German tradition. In this context, Romanticism must be understood as a critical questioning of utilitarian thinking and the absolutism of technology, and also as an attempt to establish a cultural link between nature and history.<sup>22</sup>

Curiously enough, the strip of photographs that illustrated the manifesto "Voluntad y acción" (Will and action) that appeared in the first issue of *Austral* included both a church in Ibiza published in *AC* in 1935 and the Villa Katsura in Kyoto, made known by Taut in *L'Architecture d'Aujourd'hui*.<sup>23</sup> Likewise, the echoes of the idealization of the south reached Taut in Japan. In his book *Houses and People of Japan* (1937), he referred to Ibizan rural constructions to demonstrate the climate-related determinism of architecture; he also

21 "Raíces mediterráneas de la arquitectura moderna," in *AC - documentos de actividad contemporánea*, 1935, no. 18, pp. 31-36. For more details about the concept of the Mediterranean in Sert's environment, see: PIZZA, Antonio (ed.), *J. Ll. Sert y el Mediterráneo*, Barcelona 1997.

22 For more details about the validity of Romanticism in modern architecture in terms of climate ideals, see: MEDINA WARBURG, Joaquín, "Modernidad romántica: de arquitectos alemanes y sus anhelos climático-culturales," in RIGOTTI, Ana María and PAMPINELLA, Silvia (ed.), *Entre puntos cardinales. Debates sobre una nueva arquitectura (1920-1950)*, Rosario 2012, pp. 23-48.

23 "Raíces mediterráneas de la arquitectura moderna," op. cit., p. 35; TAUT, Bruno, "Architecture Nouvelle au Japon," in: *Architecture d'Aujourd'hui*, 1935, no. 4, pp. 46-83 (illustrations of the Katsura Villa, pp. 52-55). See also the analysis of the manifesto "Voluntad y acción" in TÁBORA ROLDÁN, Andrés, *Antonio Bonet frente a sus maestros. 1938-1962: un viaje de ida y vuelta*, Universidad de Navarra (PhD thesis), Pamplona 2014, pp. 68-121.



Transformations of an 'architectural' Zeppelin in its flight around the globe. Drawing by Bruno Taut published in his *Architekturlehre*, 1937.

attempted to bolster the cultural relativism postulated in his *Architekturlehre* (1938). In this latter publication he described the trip around the world of a hypothetical Zeppelin that acts as an architectural type, adopting a different form for every geographical location (from a sphere to an oblong shape), a different orientation (vertical, horizontal or diagonal) and even a different color.<sup>24</sup> This way, he attempted to explain the phenomenon of architectural diversity, juxtaposing it with the immutability of merely technical objects. As a warning that turned into a premonition, he pointed out that if the "internationalist" denial of the climate imperative persisted, Nature would soon take cruel revenge.

Which would then be the desirable role of technology in architecture? In Taut's opinion, technology should be put at the service of architecture, and make it consistent with the climate. Thus, technology would mediate between man and the climate, determining the relation with the universe without overriding nature or rendering architecture dispensable. Thus, the inexcusable task of the architect is to reestablish the appropriate balance between climate, technology and ways of life.

At this point we need to also point out the discrepancies between Taut and Acosta in their respective searches for a fundamental approach to architecture based on the climate. Most evidently, this has to do with the questionable 'proportionality' of formal results. We only have to compare the overhanging roofs used specifically by Taut in Japan and Turkey with Acosta's *losa-visera* to perceive the differences in the architectural value they assign to them. We could understand Acosta's option to be an exacerbation of Taut's idea, so that technology at the service of climate constitutes the "lyrical side of architecture."

24 Recently re-edited by Manfred Speidel as a monographic issue of the magazine *Arch+*: TAUT, Bruno, "Architekturlehre," in *Arch+*, no. 194, 2009, p. 54.

In the same way, one of Acosta's fundamental principles is debatable: if technology is to be put at the service of man and architecture, then architecture in turn should be conceived as an instrument for man's adaptation to nature, that is, to landscape and climate.<sup>25</sup> But this question of principles would not have been lacking in conceptual alternatives. Take as an example José Ortega y Gasset's *Meditación de la técnica*, published between April and October 1935 in the Buenos Aires newspaper *La Nación*; there is a compilation edition with a foreword dated in "Buenos Aires, October 27, 1939." In his "Meditation," Ortega confronts the "naturalism" of those who defend the climate determinism, and postulates the "extra nature" condition of man. That condition would generate human needs, and the world would adapt to them by means of technique.<sup>26</sup> Man changes the climate and the earth through construction. But the adaptation of the world is relative in cultural terms, in the sense that it responds to desires that are consistent with the various notions that man can develop about his own existence, both individual and collective.

The thread of Ortega's arguments helps understand architecture as a cultural technique that leads to the anthropization of climate as a culturally relative phenomenon, and the creation of environments that are to a greater or lesser extent rendered artificial as a consequence of man's Utopian drive. One extreme case would be that of a technical culture aimed at the obliteration of the world. Faced with this liberation, it is small wonder that Ortega achieved success among 'technophile' architects of the 1950s, particularly in Germany, as evidenced by his participation in the renowned Darmstadt Colloquium in 1951. On the contrary, it is surprising that in 1960 – even before the first energy crises – Acosta himself was the guest architect invited by the Department of Architecture at Ulm's Hochschule für Gestaltung to teach courses and lecture on architecture and climate.<sup>27</sup> We must bear in mind that, at the time, other visitors to Ulm had been Richard Buckminster Fuller (in 1958) and Reyner Banham (in 1959), whose 'domes' and 'bubbles' constitute the option that is as far removed from Acosta's architecture as one could imagine.

The contrast between Acosta's postulates – he criticized air conditioning for the psychological effects of being condemned to a life of *in vitro* seclusion<sup>28</sup> – and the technical culture represented by Fuller and Banham can be interpreted in multiple ways. One of them refers to the shift in environmental awareness that seems to document Acosta's presence in Ulm. In this sense, the criticism of Fuller compiled in Maldonado's book, *Umwelt und Revolte* (Environment and Revolt) is most revealing.<sup>29</sup> To wit: behind the 'revolutionary' utilization of natural resources there hide technical 'sub-optimization' operations. This was illustrated to perfection by the proposal for a protective dome over New York, whose powerful technical display failed to clarify the environmental conditions that prevailed in a habitat where air conditioning would totally neutralize natural meteorological factors. This was a 'sub-optimal' solution inasmuch as – even though the aspiration was to achieve a highly technical efficiency – the root problems were not addressed and no contribution was made to the ultimate objectives, including those related to climate. Consequently, Fuller's purported "Revolution through Design," actually was, in Maldonado's opinion, the expression of a "technocratic utopianism."<sup>30</sup>

25 ACOSTA, W., *Vivienda y clima*, op. cit., p. 22.

26 See particularly the chapter "La vida como fabricación de sí misma. Técnica y deseos," in ORTEGA Y GASSET, José, *Meditación de la Técnica*, Buenos Aires 1939.

27 Acosta read his conference "Architektur und Klima" on 21 January 1960, and he lectured on the topic of "Klima und Besonnung" (climate and sunlight) in the construction course of the Department of Architecture of HfG Ulm from 11 January to 26 February of the same year. I thank the HfG Ulm Archives for this information.

28 ACOSTA, W., *Vivienda y clima*, op. cit., p. 120.

29 MALDONADO, Tomás, *Umwelt und Revolte. Zur Dialektik des Entwerfens im Spätkapitalismus*, Hamburg 1972, chapters 5 and 11, pp. 32-34, 46-48 (*La speranza progettuale. Ambiente e società*, Turin 1970 / *Ambiente humano e ideología. Notas para una ecología crítica*, Buenos Aires 1972 / *Design, Nature, and Revolution: Toward a Critical Ecology*, Harper & Row 1972). The book was the result of a scholarship granted by the Graham Foundation of Chicago, which also facilitated the publication of the book *The Architecture of Well-Tempered Environment* (1969) by Reyner Banham.

30 Maldonado's critique was not the only one received by Buckminster Fuller. Some German architects, for instance Oswald Mathias Ungers, were particularly critical. In that respect, see: KROHN, Carsten, *Buckminster Fuller und die Architekten*, Berlin 2004.

The motto "Revolution through Design" is a direct reference to "Survival through Design" by Richard Neutra. This last title published in 1954 and translated into Spanish in 1957 (*Planificar para sobrevivir*) still includes a clear Darwinist connotation ("survival of the fittest"), which is far from coincidental. As a matter of fact, the contemporary technical civilization had to reconsider a vindication of the biological foundations if it did not want to fall into the abyss. Neutra's apocalyptic "biological realism" aspired to be scientific in its approach to man's physiological and psychological needs. In his defense of a 'physiologically conceived space' he even established an affinity to Einstein's concept of the space-time continuum, where mass, light and energy are intertwined – consistently with the vital experiences of sensory perception and contrary to the empty and solitary space of Euclidean abstraction.<sup>31</sup>

The extent to which these vindications also assumed a return to certain climate origins was evident in one article by Neutra published in *Nuestra Arquitectura* precisely in 1960, under the title "El hogar del hombre estaba en el Sur." Broadly speaking, and even in a technical-industrial civilization, the text reinforces the notions of shelter characteristic of cold and mild climates. Starting with the corresponding physiological experiences, he established a series of psychological traits which, in turn, would generate individual and collective behavioral patterns; for example, as regards the relation between the need for isolation and the sense of shame or else the habit of getting together in a spontaneous, casual way, as compared to agreed-upon and ritualized meetings. In other words, he was gaging the cultural imprint of climate. In Neutra's opinion, this would have also produced some cultural misunderstandings, such as the ones that resulted from the colonization of Latin America, with the introduction of climate-inappropriate clothes that were imitated for reasons of social prestige. Aware of the economic and political consequences of such 'climate colonialism,' already in the 1940s and after his work in Latin America, Neutra had rejected the imposition of the cold north on the warm south.<sup>32</sup> Even in 1960, he used the climate argument to deny that modern architecture could be considered a "Nordic case." Thus, he justified his own architecture, which seemed to demonstrate quite the contrary, at least if we adopt what – in Neutra's opinion – was the basic climate-cultural distinction: the notion of the interior-exterior limit.<sup>33</sup>

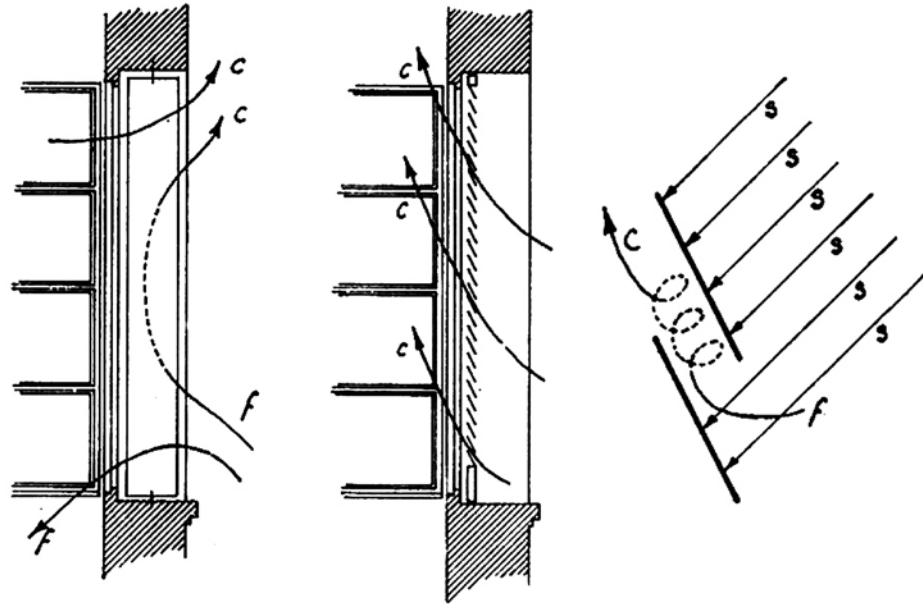
Coming full circle, we could characterize most of the domestic architecture designed by Neutra in the 1950s as a happy compromise between the climate-complementary positions of modern architecture published by Austral and Acosta in *Nuestra Arquitectura* in 1939. There is a specific connection: in 1945 Neutra became familiar, in situ, with Austral's and Acosta's work in Buenos Aires, as documented in an article that the Austro-Californian devoted to sun control devices he had seen in Latin America.<sup>34</sup> Specifically, he pointed out the novel system of parasols used by Kurchan and Ferrari Hardoy, two former members of Austral, in the Los Eucaliptos building (Buenos Aires, 1941-1943), which Neutra attributed to Argentine architect Julio Villalobos. In fact, already in 1933 Villalobos had published a "new principle for shutters" with a vertical, rotating axis. As compared to what he called the "generally used principles" of horizontal louvers (as the *brise soleil* that he was developing at the time for Barcelona and Algiers), the main advantage of his "new principle for shutters" was that they intercepted direct-sunlight

31 NEUTRA, Richard, *Planificar para sobrevivir*, Mexico 1957, p. 194.

32 "During my various trips and periods of work in Latin American countries, I have found them closer relatives to California than to other parts of the Northern Union. There has altogether been a large zone of our world rather misguided in taking 'cold Europe' and 'cold America' as their example to follow in design. It is a mental colonialism that no longer fits the day". NEUTRA, Richard, *Architecture of Social Concern in Regions of Mild Climate*, Sao Paulo 1948, p. 40. In that respect, see Catherine Ettinger's essay in this book.

33 NEUTRA, Richard, "El hogar del hombre estaba en el sur," in *Nuestra Arquitectura*, no. 365, April 1960, pp. 25-28.

34 NEUTRA, Richard, "Sun Control Devices: A Presentation Based Primarily on Examples Collected in South America," in *Progressive Architecture (Pencil Points)*, vol. 27, October 1946, pp. 88-91. I thank Raymond Neutra for pointing out to me the importance of this article written by his father. Neutra was familiar with the work of Acosta almost since 1935 when he wrote a letter of recommendation concerning the creation in Buenos Aires of a second Latin-American group of the CIAM besides Gregori Warchavchik's one in Sao Paulo. See: Letter from Walter Gropius to Wladimiro Acosta, 9.7. 1935, Bauhaus Archiv Berlin, Gropius Papers II, 129, file 18, 12/438.



Thermal advantages of the vertical-axis rotating louvers, according to Julio Villalobos's publication in *Revista de Arquitectura*, August 1933.

radiation without channeling the warm air by convection toward the outside.<sup>35</sup> This way, his system not only favored diffused lighting by “atmospheric light,” but at the same time made it possible to open glass closures, letting in the “invigorating ultraviolet rays.” Thus, Villalobos was five years ahead of his time in the conception of Austral’s window-less *umbráculo* in the House of Studios. In 1946, Neutra conceived his most-renowned work, the Edgar Kaufmann Desert House in Palm Springs, including a canopy-viewpoint with no other closure than vertical, movable louvers.

It is likewise telling to look at photographs of Neutra’s Californian houses and discover BKF chairs right in the perimetrical threshold created by the cantilevered roofs. That is to say, in the shaded area that expands from the interior to the garden, in an effort to achieve a degree of physical and visual continuity. This transit is key for an architecture born out of a specific climate – California subtropical – that is better connected to biological needs, thus establishing a genuinely new and modern way of life.<sup>36</sup> Picking up on the topic of Ortega, we should recall the compromise between culture and biology that he postulated in 1923 as *El tema de nuestro tiempo* (The Theme of Our Time).

It is evident that identifying what is modern in architecture exclusively with the paradigms of the machine and hygiene would be a misinterpretation. Likewise, anyone who analyzes Neutra's theoretical postulates and only sees in them a narrow naturalism will make a mistake: he spared no technical means to transfer his ‘Californian’ architecture to Nordic climates, and he even replicated his desert houses in the Swiss Alps.<sup>37</sup> In a conference in Germany in 1955, he clarified that architecture, understood as “applied

35 VILLALOBOS, Julio, “Un nuevo principio sobre persianas,” in *Revista de Arquitectura*, vol. 19, August 1933, no. 152, pp. 379-381. Villalobos received an award at a modern industrial furniture contest organized by the MoMA in 1941, at which point he became the trusted architect of the U.S. Embassy in Buenos Aires. That is the reason why he was entrusted with guiding Neutra during his visit to Buenos Aires. Villalobos emigrated to California in 1951, where he worked for the aviation industry.

36 NEUTRA, Richard, *Realismo biológico. Un nuevo Renacimiento humanístico en arquitectura*, Buenos Aires 1958, p. 182.

37 See the chapter “Gesundheit und technisiertes Wohnen” in EBERHARD, Katrin, *Maschinen zuhause. Die Technisierung des Wohnens in der Moderne*, Zurich, gta Verlag, 2011, pp. 115-182.



Vertical movable louvers in Richard Neutra’s Kaufmann Desert House, Palm Springs 1946-47 (from: Esther McCoy, *Richard Neutra*, 1960).



BKF chair between the house and the garden, in the Bailey House (Case Study House no. 20) by Richard Neutra, Pacific Palisades 1947-48 (photo by Julius Shulman).

physiology,” presented architects as responsible adults sitting in front of a control panel from which they control and size the stimuli that make up the environment that has been built.<sup>38</sup> It is not the artificiality of the medium that was brought to question, but rather the candid attitude to technology. The loss of innocence is what characterizes Neutra’s ideas of that other technical culture – Le Corbusier’s in 1929 and Fuller’s in the 1950s – that sought to radically emancipate ways of life of environmental conditions by overriding and replacing them. Faced with that attitude, there are many – such as Acosta, Taut or Neutra – who understood architecture as a necessary link in the long chain of cultural techniques that attempt to relate man to his environment, both natural and artificial, in a way that is consistent with his biological, physiological and psychological needs.

38 NEUTRA, Richard, “Architektur als angewandte Physiologie,” in *Baukunst und Werkform*, 1955, no. 1, p. 15.