Javier García-Germán
ETSAM, UPM, Madrid, Spain

Territory, Climate, Body and Architecture

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Toward an Ecological Typology

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This essay explores the capacity of vernacular types to engage not only the climatic and ecological dimensions of a place, but also its social and cultural commonalities. Starting with the need for an experiential approach to architecture, an initial passage explores the multisensory dimension of the human body. This leads to the everyday life experience of the inhabitants of a given place. Every place reveals common behaviours that are shared among its inhabitants, and ecological types offer disciplinary tools for attuning these questions to architecture. This essay tentatively aspires to redefine the concept of typology, overlaying the formal and material questions considered by previous definitions with performative, behavioural, and phenomenological ones.

In recent decades, the design disciplines have begun to address the pressing demands for an environmentally sensitive approach to the built environment. However, beyond the quantitative and performance-oriented approaches that have prevailed recently, any attempt to connect climate-change concerns and architecture must also focus on working on its cultural dimension, which means understanding the importance of the territorial, climatic, social, and cultural dimensions of a specific place in relation to forms of dwelling.

This implies not only addressing the interactions that exist between local climate, the spatial and material particularities of architecture, or the material ecology that a building mobilizes. It also means studying the anthropology of inhabitation to unveil the connections that exist between local climate, the spatial and material particularities of architecture, and the lifestyles of its users. Through engagement with the climate and sociocultural particularities of a place, students explore the capacity of architecture to mediate between local climates and everyday inhabitation patterns.

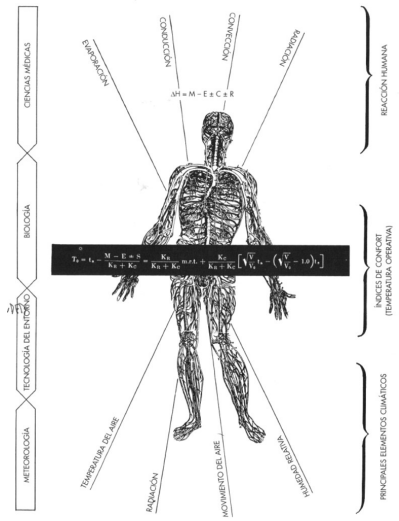
Contrary to the parametric approaches that have dominated thermodynamic architecture over the last decade, it is necessary to find architectural tools for connecting territorial and climatic questions to ordinary life and architecture. A climatic and ecological approach to typology offers an encompassing tool for bridging the gulf that exists between a local climate and a specific inhabitant's patterns of everyday life. Climatic types — both historical and contemporary — show very explicitly how architecture can interact between outdoor climate and the way people live and socialize, potentially connecting the spatial and material features of architecture with the specific physiological and psychological behaviours of its users, connecting the thermodynamic processes caused by architecture and the quotidian behaviour of its inhabitants.

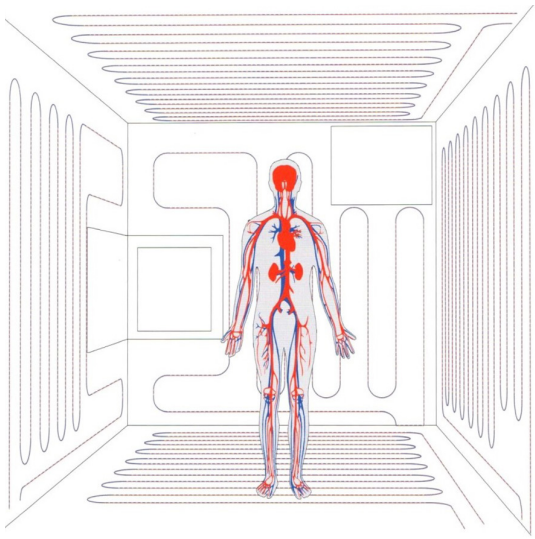
This essay explores the capacity for climatic types to engage not only the climatic and ecological dimensions of a place, but also its social and cultural commonalities. Starting with the need for an experiential approach to architecture, an initial passage explores the multisensory dimension of the human body. This leads to the everyday life experience of the inhabitants of a given place. Every place reveals common behaviours that are shared among its inhabitants, and ecological types offer disciplinary tools for attuning these questions to architecture. This essay tentatively aspires to redefine the concept of typology, overlaying the formal and material questions considered by previous definitions with performative, behavioural, and phenomenological ones.

Body, Comfort, Pleasure: From Physiology to Phenomenology

Over the past ten years, a renewed interest in the human being has emerged, positioning man in the centre of architectural discussions.[1] Even though architecture is a field of knowledge with the ultimate goal of providing

1 See for example Beatriz Colomina and Mark Wigley, *Are We Human? Notes on an Archaeology of Design* (Zürich: Lars Müller, 2016), or Kiel Moe, *Thermally Active Surfaces in Architecture* (New York: Princeton Architectural Press, 2010). For more on the current interest in neurophenomenology, see the books referenced in footnote 5.





2 Over the past few decades, several voices have researched the influence of public health and medicine in the history of the Modern Movement. See Beatriz Colomina, *X-Ray Architecture* (Zürich: Lars Müller, 2019).

3 Richard Neutra, *Survival Through Design* (New York: Oxford University Press, 1954).

4 Lisa Heschong, *Thermal Delight in Architecture* (Cambridge, MA: The MIT Press, 1979).

fig.1 *Design With Climate*, Aladar Olgyay (1969).

fig.2 *Radiant Surfaces In Architecture*, Kiel Moe (2010).

human shelter, over the past several decades, it has paradoxically focused on disciplinary discussions.

The human body was initially incorporated into the discipline of architecture through the field of public health and, decades later, through the paradigm of comfort. It is well documented that the Modern Movement fostered interest in hygiene and health and how the desire for a healthy environment deeply influenced its architectural outcome.[2] From Willis Carrier's "air-conditioned man" (1910s) and the Olgyay brothers' "bioclimatic man" (1969) to Kiel Moe's "radiant man" (2010), architecture has focused on the physiological dimension of the human body, overlooking other, equally important, perspectives.

Beginning in the 1960s, this emphasis was complemented by an interest in psychology. The "medical" body gave way to the "psychological" body, introducing the concept of the "expanded field of perception." Richard Neutra's body of work focused on psychology, representing a clear example of architecture that mediated between the environment and the user's perceptual experience.[3]

These ideas were further developed in the 1970s through books like Lisa Heschong's *Thermal Delight in Architecture*,[4] which searched for an alternative to the homogeneous environments modern architecture was delivering. In contrast to the isotropic spaces and air-conditioned atmospheres that pervaded the modern built environment, Heschong championed the multisensory aesthetic experiences offered by traditional architecture. Drawing on examples ranging from the Finnish sauna to

fig.3 LSD *Art,* Front Cover *Life Magazine* (1966).

the Islamic garden, Heschong argued that the human nervous system is programmed for changing environments rather than homogeneous ones, considering that thermal fluctuations — like those existing between North African summer temperatures and the conditions within the enclosed Islamic patio — have invigorating effects on the human body.

This multisensory approach was related to the interest in phenomenology that arose in 1970s architecture culture. Christian Norberg-Schulz's interpretation of phenomenology focused on reintroducing an original, imagined authenticity to balance the rational abstraction modern architecture had revealed. Maurice Merleau-Ponty's phenomenology was interpreted by a group of architects who introduced wholeness, rootedness, and place into architecture through embodied multisensory experience. The work of architects such as Juhani Pallasmaa, Steven Holl, and Peter Zumthor exemplifies how these questions were introduced in the built environment.

A renewed interest in phenomenology has emerged in the work of a group of architects, historians, and theoreticians who are using cognitive science, neurophenomenology, and embodied cognition "to shore up architectural phenomenology ethical project with scientifically rigorous accounts of embodiment." [5,6]

5 A number of architectural historians and theoreticians have resorted to neuroscience to reinvigorate the phenomenological project. See for example, Sarah Robinson and Juhani Pallasmaa, *Mind in Architecture: Neuroscience, Embodiment, and the Future of Design* (Cambridge, MA: The MIT Press, 2015); Sarah Williams Goldhagen, *Welcome to Your World: How the Built Environment Shapes Our Lives* (New York: HarperCollins, 2017); Harry F. Mallgrave, *Architecture and Embodiment: The Implications of the New Sciences and Humanities for Design* (New York: Routledge, 2013); or Alberto Pérez-Gómez, *Attunement: Architectural Meaning After the Crisis of Modern Science* (Cambridge, MA: The MIT Press, 2016).

6 This renewed interest in phenomenology can, for instance, be found in the issue of *Log* devoted to this topic. See Bryan E. Norwood, "Disorienting Phenomenology," *Log* 42, Winter-Spring 2018.

Unlike Freud's understanding of the sharp separation of body and mind, neurobiologists like Jean-Didier Vincent have probed the idea that environment, soma, and senses are interconnected and form a continuous realm, unveiling the fact that human psychological emotions are connected to the body's physiological processes.[7] Present interest in phenomenology is being reinvigorated through a rigorous scientific approach, which enables more precise knowledge of the effect that specific design decisions have on the perceptive environment. This means designers will be able to create architectural environments with a complete understanding of the reactions caused by specific stimuli on the human body.

The phenomenological project was based on the presupposition of another universal subjectivity — through embodiment — which would come to replace modernity's objectivity. However, rather than provide a universal theory of architecture, a revival of phenomenology must use renewed tools as a way of unveiling the particularities of different embodiments.

Making it clear that neurophenomenology will provide the practical knowledge needed to attune the human body to architecture — providing healthier, more varied, heterogeneous, and stimulating atmospheres — the real challenge is to understand how this physiological-perceptual paradigm can permeate architecture in everyday life. This question introduces the second part of this essay, which explores how ordinary everyday life atmospheres can help with understanding how the built form affects how occupants perceive, think, and behave.

Atmospheres of Ordinary, Everyday Life

Ordinary life has been a continuous source of inspiration for architects. From Robert Venturi or Rem Koolhaas to Atelier Bow-Wow, the study of ordinary architecture and urbanism has enriched and transformed architecture culture. Architects typically turned to existing urban phenomena for redefining their own discipline. Learning from Las Vegas studied the strip mall to formulate the decorated shed principle. Delirious New York explored the architectural conditions of the Manhattan skyscraper to reinvigorate architecture through programme hybridization.[8,9] Made in Tokyo documented anonymous contemporary architecture in the city of Tokyo as an alternative to the sophisticated star-architecture culture.[10] Unlike these books, which focused exclusively on the built environment, a new generation of publications analyse the connections between users, everyday life, and the built environment. Revealing an anthropological perspective, ordinary, everyday life is mapped to show how architectural and urban elements interact with non-architectural elements such as the human body, plants and animals, or atmospheric phenomena to define particular behaviours.

For instance, recent books by Atelier Bow-Wow explore what they define as the "ecology of livelihood."[11] Through meticulous, detailed sectional perspectives, Momoyo Kaijima and Yoshiharu Tsukamoto

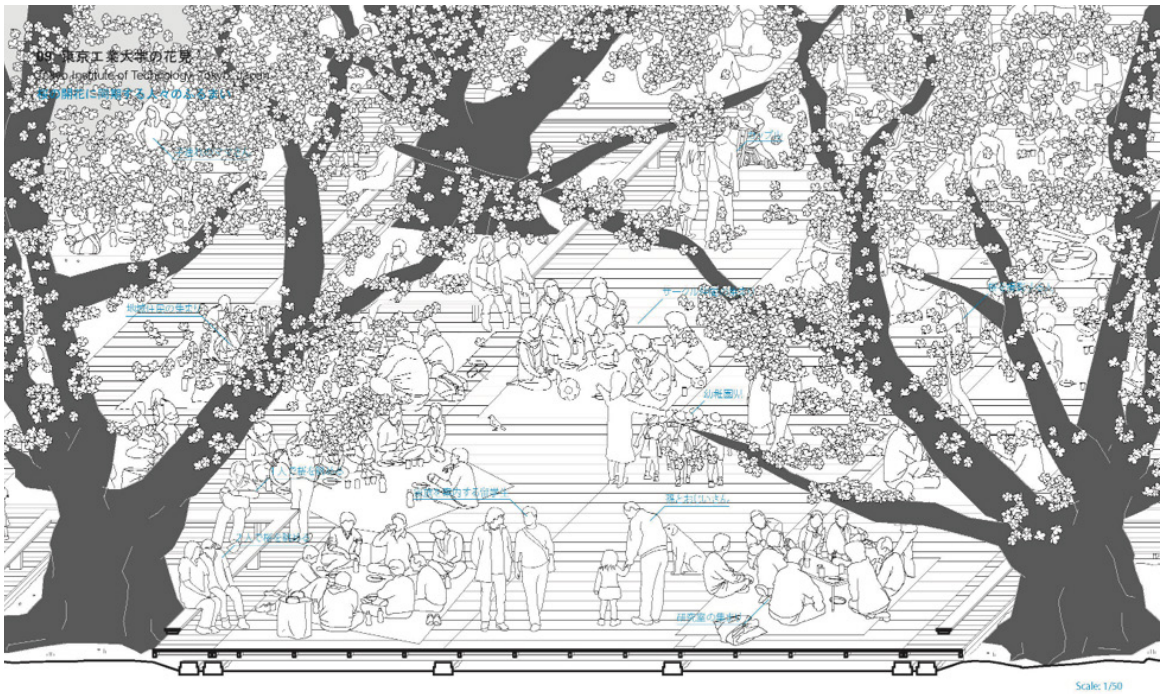
7 See Jean-Didier Vincent, *The Biology of Emotions*, trans. John Hughes (Oxford, UK: Basil Blackwell, 1990).

8 Robert Venturi, Denise Scott Brown, and Steven Izenour, *Learning From Las Vegas*, rev. ed. (Cambridge, MA: The Massachusetts Institute of Technology, 1977).

9 Rem Koolhaas, Delirious New York: A Retroactive Manifesto for Manhattan (Oxford, UK: Oxford University Press, 1978).

10 Junzo Kuroda and Momoyo Kaijima, *Made in Tokyo* (Tokyo: Kaijima Institute, 2001).

11 See books such as Atelier Bow-Wow, *Commonalities, Production Of Behaviors* (Tokyo: Lixil, 2014), Yoshiharu Tsukamoto, *WindowScape: Window Behaviourology* (Singapore: Page One, 2012), or *Windowscape 3* (Japan: Film Art, 2016).



represent how users inhabit buildings. Overlaying the space of construction with the space of human interaction, the space of representation with the space of occupation, they show the interrelationships between diverse elements. For example, the drawing "Cherry Blossom Viewing" depicts an annual Japanese event showing the precise interaction between the arrangement of cherry trees, cast shadows, the beauty of blossoming flowers, a picnic, and social encounters, which together make this specific situation memorable.[12] Tsukamoto explains that they listen to and observe user behaviours to understand what is happening in each place, claiming "[e]very place reveals unique behaviors that are shared among the people who are part of that place. These behaviors are not something we can design. They are already there. We can only encourage or intensify them by intervening in existing conditions that define the behavioral capacity of that space."[13]

Photography is of great use in the search for ecological connections between inhabitants, the built environment, and climate. Modern and contemporary photographers — from Henri Cartier-Bresson, Frank Kappa, or Francesc Català-Roca to Joel Meyerowitz — have documented everyday life during the last century, showing the connections that exist between climate, architecture, atmosphere, and human behaviour. Through their work, natural and built environments can be analysed to further understand

12 Drawing by a student at the Tsukamoto Workshop at the Tokyo Institute of Technology (2013–14), from Atelier Bow-Wow, *Commonalities of Architecture* (Delft, Netherlands: TU Delft, 2016), 52–53.

13 Atelier Bow-Wow and K. Michael Hays, *Architectural Ethnography: Atelier Bow-Wow.* (Berlin: Sternberg Press, 2017).

fig.4 (previous page)
Commonalities, Cherry Blossom Viweing at Tokyo Tech, Atelier Bow-Wow (2013–14).

fig.5–6 *El Mojón,* Francesc Català-Roca (1967).

the relationships between places and people. Pictures introduce everyday life, unveiling not only productive activities or social patterns, but also more mundane tasks — though equally relevant for understanding the connections between humans and climate — such as how people dress or interact with the built environment, revealing situations in which inhabitants are enjoying a good life. Interestingly, these everyday life circumstances are sometimes framed by architectural devices — a glass house or a porch — providing a first approximation of the architectural arrangement a particular climatic situation requires. This enables architects to find the architectural elements that can deliver the same climatic effects, articulating a smooth and continuous thread between everyday life situations and the architectural frame that causes them.

However, this documentary evidence needs to be complemented by a parallel initiative that aims to understand the existing interactions between the built environment, the microclimate it causes, and the way it is inhabited. Relating these questions to each particular situation requires acknowledging the thermodynamic connections that tie the human body — both its physiological functions and psychological emotions — to architecture's spatial and material features. This means understanding precisely which thermodynamic phenomena connect human behaviour

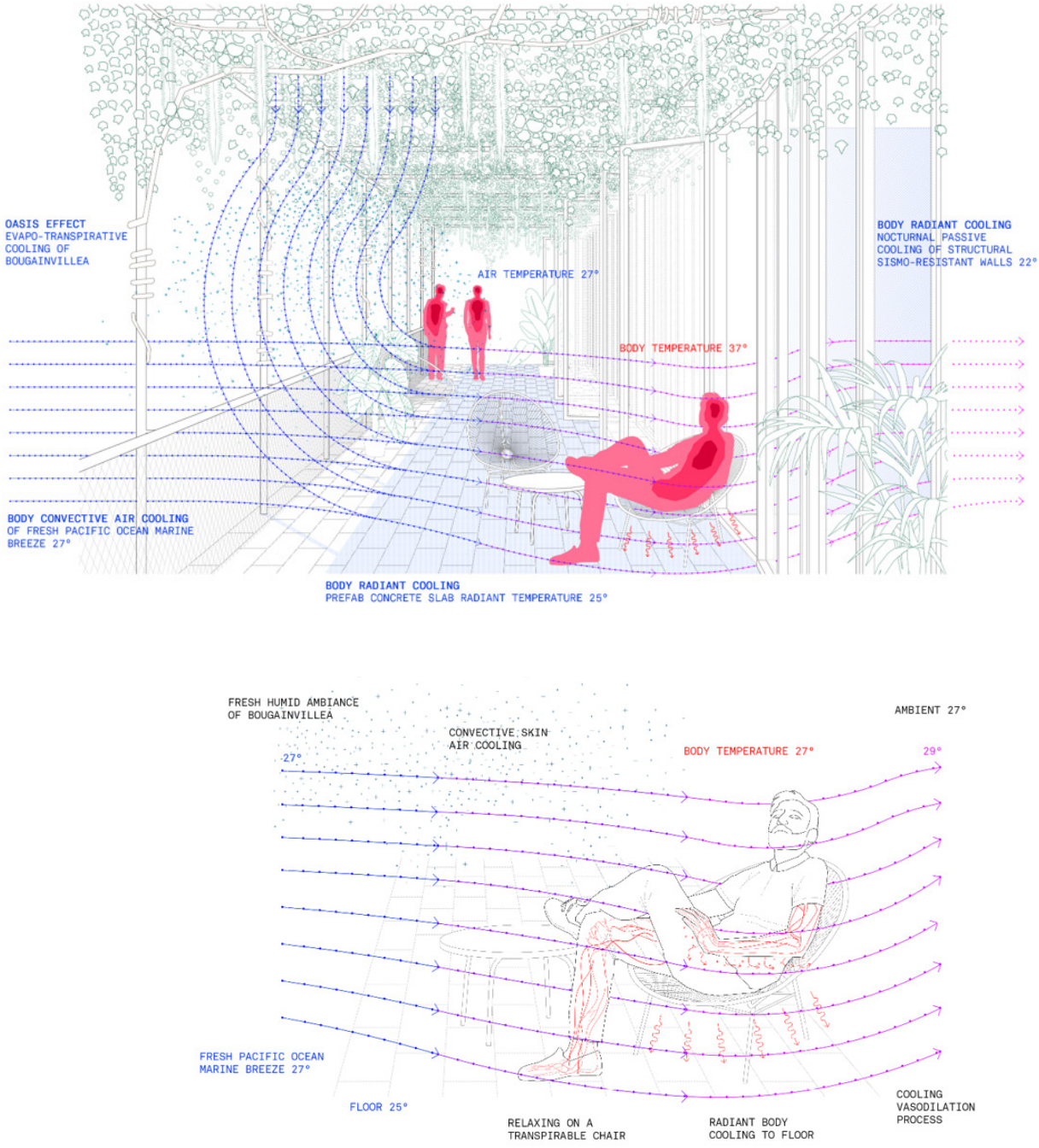


fig.7–8 Physiological Processes of Man Under Bouganville Shadow. Concytec Competition, Lima (Perú). Taas & Javier García-germán (2015).

to its context, as well as understanding the physical interactions — haptic, thermal, acoustic, and so forth — at play in a specific situation and how these affect the human perception to make it intense and pleasurable. The goal is to overlay ethnographic investigations of everyday life with the technical expertise provided by disciplines such as physics, physiology, or neuroscience with architectural tools to develop a wholistic approach that enables the design and build of successful spaces. This is done by searching for architectural elements that evoke such social and physiological behaviours. Both historical and contemporary architecture culture offer examples of spatial, material, passive, and mechanical elements that can provide the comfortable and intense climatic effects found in specific situations.

The attached figure shows a proposal for a public, covered open corridor for an office building drawn for a competition. It depicts the interactions between the material space, its microclimate, its plants, and the behaviour of its users. It is passively ventilated to generate a stimulating space that encourages social interaction. It can be argued that this space works at a social level due to its stimulating and passively generated atmosphere. In turn, this atmosphere works because the psycho-physiological processes have been properly designed.

Climatic Type as Spatial Practice

It is difficult to predict the architectural situations in which specific atmospheres will unfold. However, climatic types offer an invaluable knowledge for understanding how specific architectural solutions mediate between local climates and the everyday life of inhabitants. Present in different latitudes around the world, climatic types offer an extensive catalogue of basic architectural solutions that effectively adapt to the climate. Classic books like Jean Dollfus's *Les Aspects de L'Architecture Populaire dans le monde*[14] or Bernard Rudofsky's *Architecture Without Architects*[15] are valuable references that distil the architectural and climatic strategies at work.

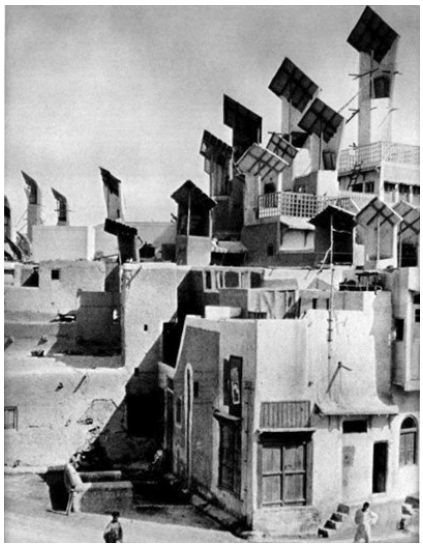
Climatic types offer a precise orchestration of spatial and material considerations for a specific microclimate. Challenging the modern insulated-envelope paradigm, these types interact with climatic conditions, articulating an open-system thermodynamic approach to architecture. Furthermore, climatic typologies display precisely how specific thermodynamic mechanisms, like a patio or attached greenhouse, overlay purely performative questions with other issues that are connected to the way in which architecture is used. For instance, Lacaton & Vassal systematically attach polycarbonate greenhouses to buildings, a great example of the powerful connection between specific thermodynamic devices, the microclimates they generate, and the everyday life that can potentially be experienced by its inhabitants. From post-occupancy photographs, it is also possible to understand the experiential engagement

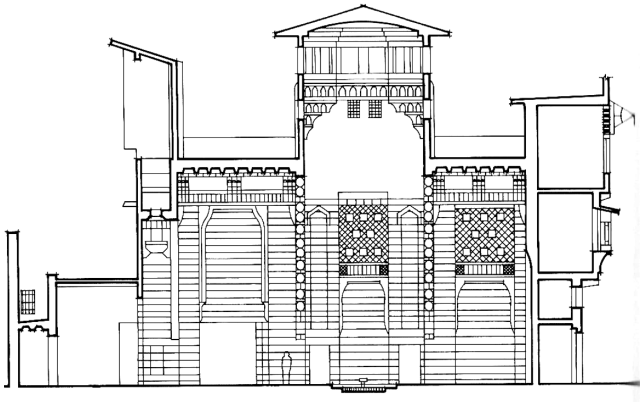
14 Jean Dollfus, *Les Aspects de L'Architecture Populaire dans le monde* (Paris: Editions Albert Morancé, 1954).

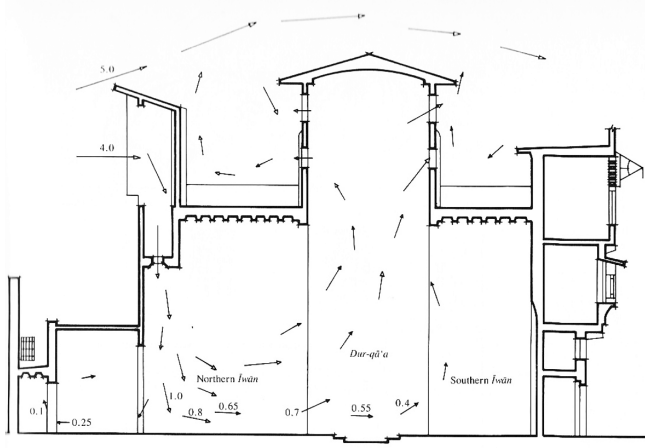
15 Bernard Rudofsky, *Architecture Without Architects: A Short Introduction to Non-Pedigreed Architecture* (New York: Museum of Modern Art, 1965).

fig.9 The Wind Catchers of Hyderabad (1928). *Architecture Without Architects*. Rudofsky.

fig.10 Muhib Ad-Din Ash-Shaf I Al-Muwaqqi. In *Natural Energy and Vernacular Architecture*. Hassan Fathy (1986).







of users within induced microclimates, unveiling the capacity for climatic types to mediate between habitation behaviours and the physiological and psychological processes at work.

Climatic Types Are Also Metabolic Types

Interestingly, climatic types offer more than a precise spatial and material climatic orchestration. They also give compelling lessons regarding its material ecologies, giving very interesting clues about the connections between the material composition of a building and the regional geographies where those materials come from. This question is driving a renewed interest in vernacular and primitivist technologies.

For instance, the study of a wood Swiss Alpine chalet displays a very simple material metabolism. It offers the possibility to understand where materials are sourced from and where they are transformed. Similarly, other buildings with massive structures such as a rammed-earth Moroccan *ksar* located in the in foothills of the High Atlas or a limestone trullo in the Italian region of Puglia display simple material ecologies. In the case of the Murgia trullo, the dry-stone keystone vault can be traced down to the Murgia karst plateau geology, stone being sourced from the limestone quarries around Alberobello. Likewise, in the case of the Ait-Ben-Haddou *ksar*, the earth is sourced around the building site. Interestingly, in these massive monomaterial structures, one material prevails, its simplicity assuring both the trackability and the recyclability of these structures.

Natural ecosystems work according to laws which cycle material flows following a closed process where outputs become raw matter for the next material input. Attuning building processes to natural dynamics requires using organic building materials which form part of geo-ecological spatiotemporal cycles. The pulsing drive for wood, stone or earth as building materials responds to this demand to synchronize building cycles with natural cycles.

The material strategies unfolded by practices such as TED'A arquitectes, Anna Heringer or Francis Kéré make use of building techniques such as load-bearing rammed-earth walls or brick masonry which reinvigorate local and artisanal practices. The building procedures they use are close to the AT movement — appropriate technology movement — unfolding a technological apparatus which is adapted to its economical and social context. However these nostalgia-driven regional positions, even though are very necessary in the contemporary context, cannot be used widely — as, for example, they are not applicable for massive housing developments in the ever-growing cities of the tropical belts; they need to be refuted by optimistic architectural practices which, recharging ancient low-cost techniques with industrial procedures, propose a renovated multicultural material ethics, granting a cosmopolitan perspective to traditional building procedures.

16 Anthony Vidler, "The Third Typology," *Oppositions* 7 (Winter 1977), available at https://monoskop.org/images/5/50/Vidler_Anthony_1977_1998_The_Third_Typology.pdf.

17 Alan Colquhoun, "Typology and Design Method," *Perspecta* 12 (1969), 71–74.

Toward a Fourth Typology?

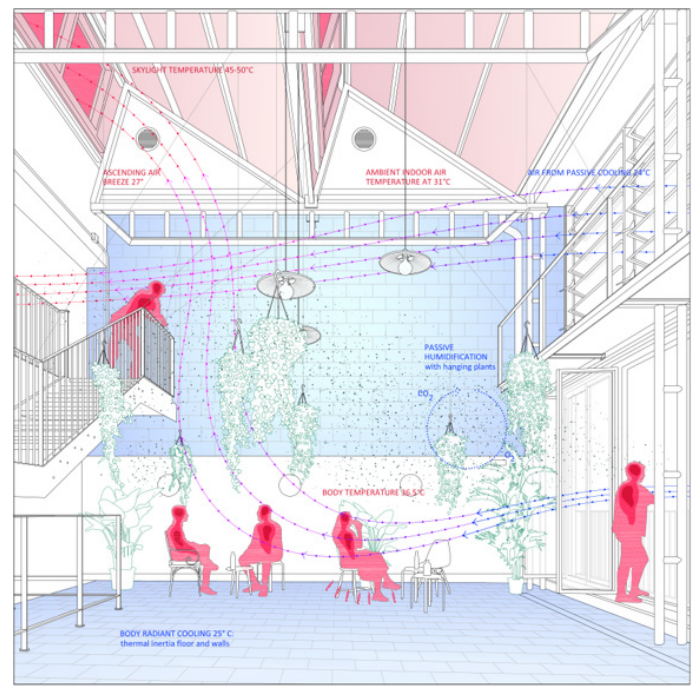
According to Anthony Vidler's 1977 article, "The Third Typology," the idea of typology has had three different conceptualizations.[16] Initially, it was connected to the natural order of the primitive hut. An outcome of the rationalist philosophy of the Enlightenment, the prevalent idea during the eighteenth and nineteenth centuries understood the combination of type-elements as the expression of the underlying form of nature beneath its surface appearance. In the early twentieth century, this understanding gave way to a second idea of typology linked to technological production, best exemplified by Le Corbusier's interest in the industrial "object-types." Developed through a long optimization process, the concept of object-type became the basis for design.

However, in the 1960s these initial definitions were questioned, sparking an interest in the form of the traditional city and bringing forward a third understanding of typology. Transcending former conceptualizations which found validation outside the discipline, the new idea of typology found its focus of interest in the traditional city and its architecture. According to Alan Colquhoun, modernity oscillates between "biotechnical determinism" on one hand and the "free expression" of the architect on the other, but leaves a void that had been previously filled by core disciplinary values.[17] The new idea of typology that developed during those years bridged this gap. Connected to urban form, it was recognized as a disciplinary tool for understanding the morphological evolution of the city through time. Devoid of the ideological content of previous conceptualizations, typology now offered a set of objective architectural tools referring to their formal nature as architectural elements.

Interestingly, there is a symmetry between the idea of typology that appeared in the 1960s and the renewed interest that has emerged over the past several years. Contemporary architecture has also oscillated between two opposing positions: the performative ecodeterminism of sustainable practices and the delirious genius of the star system. Unfortunately, this polarization excludes several essential architectural questions, operating in a cultural and social vacuum that obviated not only core disciplinary values and the historical background of architecture, but also its human and collective side.

Similar to what happened in the 1960s, this vacuum must be counteracted by a return to core disciplinary values and social engagement. From this point of view, a typological discourse can potentially bridge the void between the techno-scientific and the social and cultural opposites required to interact in architecture. Climatic typology — or the study of climatic types — has the potential to fill this vacuum. Climatic types bring forward a new understanding of typology, which merges the thermodynamic, the cultural, and the social. This is done using concepts and tools belonging to the discipline of architecture.

fig.11–12 Taas & Javier García-Germán. Climatic Social Condenser in 159 Unit Social Housing Scheme. Carabanchel, Madrid (2017–2022).



From a performative point of view, climatic types are understood as material constructs that orchestrate space, matter, and programme to generate specific climates.[18] Unlike Dollfus or Rudofsky, who link climatic types to specific geographies and regions, this idea of typology is no longer understood in connection to a given place, but as thermodynamic schemes available for use in a variety of locations and situations — as long as they are compatible with local climates — paying tribute to Durand's idea that architectural history offers a wide variety of solutions that can be recombined in novel ways. This concept circles back to the correlation between type and form that pervaded typological definitions until the iconographic turn dispensed with it.

Moving from the performative to the behavioural, this understanding of typology complements the formal idea prevalent in the 1960s. Integrating atmosphere with peoples' behaviours, it conflates the architectural conceptualization and construction with its occupation, drawing architecture closer to Henri Lefebvre's concept of "spatial practice."[19] This idea of typology combines architecture, anthropology, and psychology to deliver an understanding of architecture that overlays its spatial practice, the representation of space, and representational space.[20] To put it simply, this understanding superimposes lived space, perceived space, and conceived space, designing spatial and material systems to provide an intense and stimulating atmosphere, where everyday life can unfold.

Transcending Le Corbusier's industrial types, Nikolaus Pevsner's functional types, Venturi's iconographical types, or Aldo Rossi's formal types, this understanding of typology also supersedes the notion of "behavioural typology," which has been recently defined. [21,22,23] In behavioural typologies, content prevails over container, human behaviour and activity over space, habitability over structural consistency. Expanding on this idea, climatic types conflate the formal and material structure of the architectural type with the microclimates it elicits and the behaviour of its users, superseding performative determinism to embrace an open ecological interaction between architecture, atmosphere, and the social with human bodies.

Unlike previous visions which understood that "type can no longer define the confrontation of internal ideology and external constraints," this interpretation unveils the fact that architectural tools like typology can be aligned with political endeavours.[24] This new idea of typology delineates an inclusive architecture that complements the quantitative rigour unfolded by thermodynamic practices with a stronger emphasis on everyday life experience. It merges the quantitative, techno-scientific thermodynamic and ecological discourse on sustainability with a disciplinary outlook to provide more intense and stimulating atmospheres for everyday life and a politically charged agenda.

18 Performative refers to the climatic performance specific spatial and material features can elicit in an architectural interior.
19 Hays, 23.
20 Henri Lefebvre, *La Production de l'Espace* (Paris: Editions Anthropos, 1974).
21 Nikolaus Pevsner, *A History of Building Types* (London: Thames & Hudson, 1976).
22 Aldo Rossi, *L'architettura della* città (Padova, Italy: Marsilio Editori, 1966).
23 See Marco Casamonti, "Architectural Typology vs. Behavioural Typology," *area*, Oct. 6, 2014. Available at https://www.area-arch.it/en/architectural-typology-vs-behavioural-typology-2/.
24 Rafael Moneo, "On Typology," *Oppositions* 13 (Summer 1978), 22–45.