

DOMINATION AND SYMBIOSIS IN THE AMAZON RAINFOREST

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In the center of Piazza Navona, in Rome, in place of the trough for the horses of the Pamphilj family, there is now, since 1651, the fountain made by Gian Lorenzo Bernini in travertine, marble, granite, and bronze which represents the four major rivers of the continents then known: the Danube for Europe, the Ganges for Asia, the Nile for Africa and the Rio de la Plata for the Americas. The statues representing the rivers are the work of other artists, Antonio Ercole Raggi, Claude Poussin, Giacomo Antonio Fancelli, and Francesco Baratta, but Bernini's heroic conception fixes the point of origin of the four rivers and, therefore, we could say of the world itself or at least of the vital principle, of the natural and primal force that makes life on earth possible. *Erosão. Sorimão u Ipirungáua (Erosion – The Origin of the Amazon River, 1952)*, by Brazilian musician Heitor Villa Lobos, is a grandiose sonata full of dissonances, as I believe is typical of modernist music, animated by impressionistic touches and refers to a universe that, on that date, could well be said to be unknown. In about fifteen minutes the composition takes us to a series of sound spaces and thunder and a whisper alternate, a fresh chirping followed by a sudden aggravation of the notes.

There is Amazonian architecture made up of many and different versions that represent specific histories, cultures, and different peoples. In the film *Fitzcarraldo* (Werner Herzog, 1982), the protagonist embarks on a long journey to listen to Enrico Caruso singing in *Ernani*. Despite heroic efforts, Fitzcarraldo, who is the protagonist, arrives late, just in time to see the public evacuate from the Manaus Opera House. It is the Amazonas theater, built in the last decade of the nineteenth century, and an emblem of the conquest, colonization, and civilization of the region. Seven hundred seats, inaugurated in 1896 with La Gioconda by Amilcare Ponchielli, the theater is a singular stylistic hybrid, with an Italian-designed neo-Renaissance architectural base, surmounted by a gigantic dome decorated with ceramic tiles assembled according to the colors of the Brazilian national flag and it is also the sign of the triumph of economic globalism at the end of the century when raw materials, in this case, rubber, became vectors of migration, investments, and connections, which could easily cross the oceans and penetrate the most distant forests. At the center of the city of Manaus is the “Bosque da Ciencia,” the scientific forest that presents, relocated to the urban context, the fauna, and flora of the Amazon. Inaugurated in 1995, with an extension of thirteen hectares, it gathers some memorable attractions such as the largest leaf in the world belonging to the *Coccoloba* genus (Polygonaceae) and the manatees that swim in the tank together with other typical species of the forest.

Brazil, 2009.
© Sebastião Salgado/Amazonas Images/Contrasto.



Marubo Natives, Amazonas States, Brazil, 1998.
© Sebastião Salgado/Contrasto.



Manaus was born as an outpost in the jungle, a commercial and logistic center serving the export of rubber, and its symbols, therefore, represent the eruption, in the center of the Amazon, of European and cosmopolitan culture, largely still based on rules colonial, of the Belle Époque. Around and beyond the city extends the endless expanse of the rainforest with the tangle of thousands of rivers that feed the Amazon River, which in Manaus receives its major tributary, the Rio Negro, and the network of roads, of various dimensions and quality, which connect centers separated by immense distances and cross the borders with Venezuela, Peru, and Bolivia.

About seventy years after Vila Lobos another musician, Jean-Michel Jarre, tries his hand at the theme by releasing the album *Amazônia* where the rhythmic and melodic fabric welcomes a continuous buzz of voices, sounds, songs, percussion, and noises; a symmetrical sound carpet to the green and blue carpet that covers the forest. Jarre explains: "I wanted to avoid the ethnomusicological approach or creating background music. So, I conceived a sort of toolbox containing musical elements – orchestral and electronic – intended to recreate or evoke the timbre of natural sounds, to which I added sounds from the environment, and finally ethnic sources (voices, songs, and instruments) from the sound archives of the Ethnography Museum of Geneva (MEG)". And then he adds: "I approached the Amazon with respect, in a poetic and impressionistic way"¶. The fifty-two minutes of the composition are the soundtrack that accompanies Sebastião Salgado's two hundred photos collected in an exhibition, *Amazônia*, which offers special observation points to enter and get lost in the forest, among its inhabitants and its landscapes. The photographs are collected in aerial views, organized by forests, rivers, storms, mountains, islands, and close-up portraits of members of ten different Amazonian populations. In the repeated shades of Salgado's deep black and white, *tout se tient*: aerial views, storms, rivers, and the bodies of the natives, with the clear intention of demonstrating the symbiotic profile of an immense and differentiated world but also unitary and unique; a universe in which, according to Salgado's story in images, everything belongs to the same nature. In Salgado's photos, architecture appears very little, his lens lingers to emphasize the interpenetration between people and the natural environment, a fascinating and unknown relationship, for a European eye, but which overlooks the fact that together with the environment the built environment also exists in the Amazon, which includes a series of different types but all based on the use of wood and foliage, especially in the innermost regions, while the use of masonry,

in raw earth or bricks, it is more frequent in the conditions where the European influence was strongest, such as in the *Quilombo*, in the Bandeirista Houses and the metropolitan slums.

Kamayurá houses are vast rooms covered by a single wooden structure which is wall and roof, entirely covered with straw; the entrance takes place through a single small opening in the center of a completely blind wall: "A well-known indigenous residential typology, the *Oca* (in Tupi) or *Oga* (in Guaraní) is one of the forming units of villages. Usually built with straw and timber, without interior separations, it is a collective living space and is also used for daily activities such as cooking and making artisanal objects. Another example of indigenous living spaces is the *Maloca*, mainly found in the Brazilian and Colombian Amazon. They are also known as 'big houses' and are larger than the *Oca*, besides having interior partings in which different family groups live. Each tribe bestows specific features to the architecture and space organization"⌘.

The relationship between native populations and contemporary architectural culture reflects the complexity of the processes of colonization, integration, and conflict that run through the history of the Amazon. The most significant architectural story, able to interpret the colonial dimension in a dialectical way, is due to Severiano Porto who, in 1966, settled in Manaus and remained there for thirty-six years, tracing the coordinates of an architecture strictly connected to local conditions: "architecture for rural areas starts to opt for local materials, low-impact construction techniques, traditional typologies and passive strategies for solar protection and ventilation. The Minas Gerais architect Severiano Porto, trained at the Federal University of Rio de Janeiro (UFRJ), was one of the first Brazilian architects to systematically concern himself with the preservation of the Amazon environment"⌘.

Using techniques and materials typical of the Ribeirinhos and Caboclos populations, Porto creates an architecture that can well be defined as Amazonian. In the house built for himself, in 1971, and in the Residência Robert Schuster (1978), both in Manaus, he widely uses wood as the main building material and arranges plans, sections, orientations, roofing, and facade treatments to adopt all bioclimatic strategies, with natural shading and cooling techniques. The most innovative aspect of Porto's architecture, compared to the local context, is the systematic introduction of wood as the main material: "timber was cheap, easily available and well known to local builders"; a pragmatic choice but also of strong ideological and political value, in an era in which, in the Brazilian Amazon, "the idea of adapting a building

to local conditions was almost non-existent”^Λ. In Manaus, Porto builds other significant residences, such as the Balbina Center for Environmental Protection (1983-88, with Mario Emilio Ribeiro) which represents the most accomplished manifesto of modernist architecture founded on the reworking of Amazonian cultural elements, with its soft landscape of pitched roofs covered by local tiles called *Cavaco*, made of wood splinters: “The roof is a continuous and unique surface that covers the entire complex, varying in form, height, and width, providing good protection from solar radiation and rain”^Λ.

The legacy of Severiano Porto remains an important alternative, in Brazil, to the modernist formalism of Oscar Niemeyer and the brutalism of the Paulista school, and numerous projects nourish a position characterized by the recognition of non-European cultures, attention to ecological impact, the systematic use of bioclimatic solutions. In the heroic modernism of Niemeyer, Alfonso Eduardo Reidy, and Lucio Costa, in Rio, and João Batista Vilanova Artigas, Lina Bo Bardi, and Paulo Mendes da Rocha in São Paulo, the modernist Brazilian architecture is born from the grafting of European models and industrial materials in the vibrant body of the Brazilian metropolis, elaborating an impressive local version of international culture.

Compared to the masters of metropolitan Brazil, the forest, provincial architecture of Severiano Porto is radically different; it belongs to the culture of the time but also in a different current of thought, which is, in many respects, alternative. Porto’s antecedents and fellow travelers are found in various international models of vernacular architecture, such as the San Francisco Bay Style, proposed by William Wurster (1895-1973) and presented at the San Francisco Museum of Art in 1949, with the *Domestic Architecture of the San Francisco Bay Region* exhibition^Λ. In the refinement and awareness of Porto’s cultural design, the famous exhibition *Architecture without Architects* (MoMA, 1965) could also have played a role, a manifesto of new attention to non-modern, local, vernacular architecture, and a sensational expression of a rejection of the codes disseminated by Modernism and International Style^{*}. Bernard Rudofsky’s research, although strongly oriented towards an international one, does not however report any mention of the Amazon.

The strong modernist imprint of Brazilian architecture still seems dominant today with its message of optimism and confidence in the possibility of making an important contribution to the country’s problems. Of note is the initiative of *NAMA – Nucleus Modern Architecture in Amazonia*, which on the website defines itself as “a thematic nucleus of the Federal

University of Amazonas – UFAM and gathering of artists, architects and research groups from the universities, which seeks the recognition, documentation, preservation, and dissemination of Amazonian modernity. It started its activities in 2016 by organizing the I SAMA – Seminar on Modern Architecture in the Amazonia in Manaus. From then on, it organizes annual and itinerant seminars: the II SAMA in Palmas, 2017, the III SAMA in Belém, 2018, and the IV SAMA in Boa Vista, 2019”^Λ.

As Marcos Cereto (professor at the Faculdade de Tecnologia at Universidade Federal do Amazonas – UFAM) noted in the Nama MIT Conversation, “Shabonos and Malakas are part of contemporary architecture in the Amazon. Severiano Porto learned from Yanomani’s *Amaku* coverage”^Λ. Cereto recognizes a concept that, differently, is clearly expressed in Salgado’s photographs: we all live at the same time but, also, each culture lives in its own time, and that communication, cultural and technological exchange, economic relations between the clear world of the global network and the Amazon rainforest is a project with an important, albeit recent, history and a future yet to be written.

THE AMAZONIAN LEGACY OF SEVERIANO PORTO

The legacy of Severiano’s experience is an important memory for Brazilian architecture, a lesson in humility and attention to the environment that was also appreciated by strongly urban architects rooted in the Paulist modernist line, such as Angelo Bucci[†]^Λ. The lesson of Porto can be found, for example, in the Rio Bonito House (2005, built in Lumiar) by Carla Juaçaba[†][†] and in other projects that, in recent years, again resume the theme of architecture strongly linked to local conditions. The Experimental Floresta Ativa Center (2014-17) is built by Cristina Xavier in Arapiuns using two traditional techniques, the wooden structure and the thatched roof from local palm trees[†]^Λ. The Centro de Pesquisas Cangucu (1998-99), by Luis Hildebrando Ferreira Paz, also belongs to this approach. The Xingu Indigenous Park (2019), built in the Kisêdjê Settlement, in São Félix do Araguaia, is a community and cultural center designed by Estúdio Gustavo Utrabo and is a project that interprets the characteristics of Xingu architecture, based on the construction of voluminous canopies in wood and straw, and returns a rationalized and industrialized version, with an elementary volume with a concrete base, a wooden structure, brick walls, and a tin roof[†]^Λ.

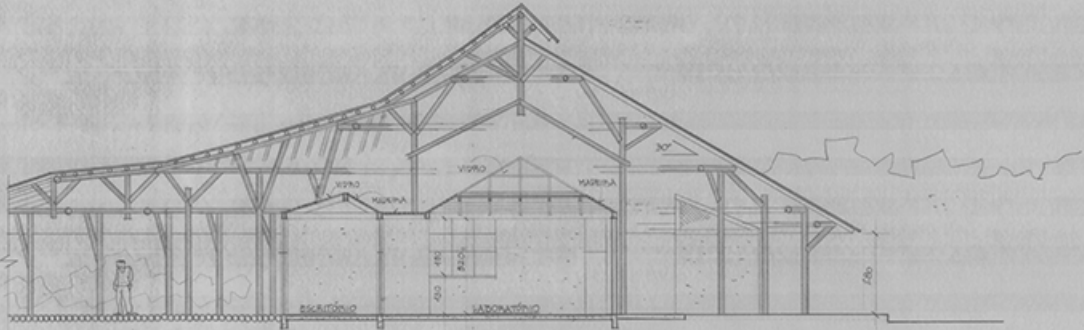
Among the works proposing an interesting contemporary vernacular, evolved and stripped of picturesque elements, is the Children Village, built in Formoso do Araguaia by Aleph Zero

(Gustavo Utrabo & Pedro Duschene) and Rosenbaum (Marcelo Rosenbaum & Adriana Benguela) and awarded with the RIBA Award for International Excellence 2018. In this college building, the link between local traditions and knowledge is brought together through specific participatory know-how¹¹. As Camillo Magni writes, “Marcelo Rosenbaum, owner of the studio, is known in Brazil for his design methodology called ‘people transforms’ with which he investigates the possibilities of combining an authorial activity such as a project with a participatory approach. Addressing mainly the indigenous communities of deeper Brazil, he immerses himself, travels, and lives firsthand in the contexts where he works, absorbing the culture of the place and conveying it within the architectural project. With great sensitivity, he draws on the most ancient knowledge linked to ancient traditions and opens cultural bridges between the present and the past”¹². The technology is based on the layout of buildings in raw earth blocks and imposing wooden structures in the courtyard. It is the large continuous canopy, supported by 288 lamellar wood pillars, which seems to evoke, reformulated in a rationalist key, the continuous roof of the Balbina Center for Environmental Protection by Severiano Porto. The college represents, as Magni notes, a peculiar meeting point between the two traditions, the modernist one prevailing in São Paulo, and the vernacular one ascribable to Porto: “It is interesting to highlight how the typical rigor of Paulista architecture is recognizable in the inflexible geometry of the steps structural and in the muscular structure that becomes the main figure of the architectural composition. At the same time, the use of materials such as wood and raw earth as well as the articulated variation of non-load bearing elements (terraces and recreational spaces) constitute a different way of interpreting the project and connecting it to the local context”¹³. Technologies are explicitly commensurate with local conditions, “the decision to use glued laminated eucalyptus wood came from the abundance of the material in Brazilian territory, the absence of the use of wood in larger-scale buildings and all the benefits that a light and slender structure could provide to the project”¹⁴.

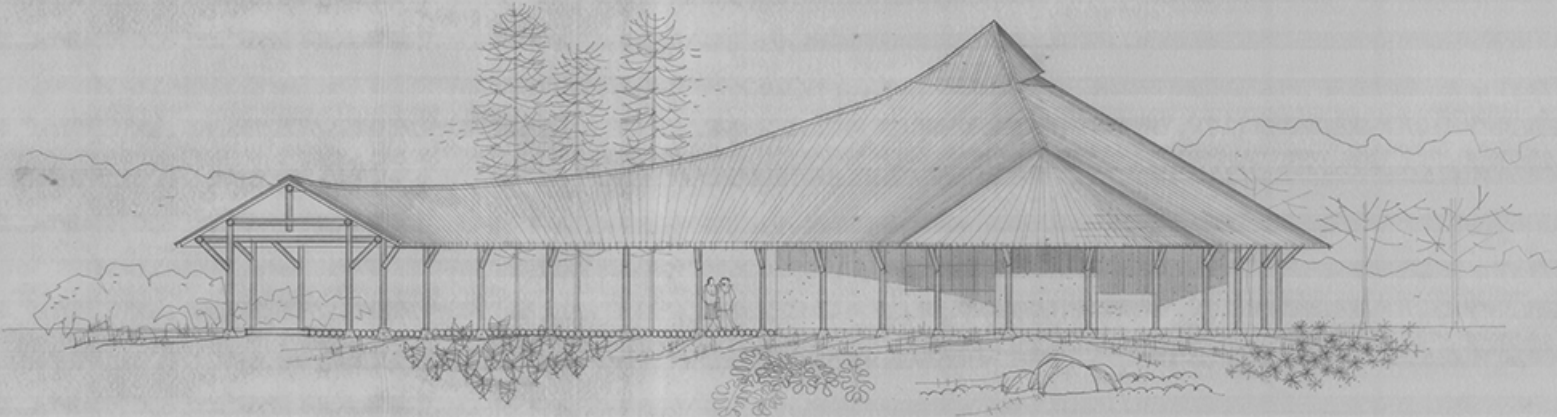
In the Amazonian and Brazilian scenario, the renewed interest in environmentally sensitive, sustainable architecture, commensurate with local resources, is combined with the constant tension of a territory that remains frontier; a laboratory where the destinies of the planet, which are also linked to massive deforestation, overlap with the issues of cultural, and sometimes even material, survival of native populations. In the XVII Venice Biennale of Architecture (2021) the collective Somatic

Collaborative presented a project, “Manaus: A New Contractual Agreement between City and Forest in Urban Amazonia – 2020”¹⁵ which, in an experimental approach, hypothesizes a new alliance between the world of the rainforest and a potential new urban development: “[the project] examines the urban and territorial transformation of the Mindu River, a small inner city stream that connects the Amazon and Black Rivers with the Reserva Florestal Adolpho Ducke. Through the careful examination of five spatial conditions – the tower, the island, the urban edge, the anchor, and the bridge – the project proposes an urban imaginary that transforms the Mindu and advocates for a co-existence of ecological conservation and urban development, tempering the harsh divide between city and forest in the Amazonian region”¹⁶. The discussion is open: the tension between the imitation of tradition and new ideas of order and progress can be the common thread that, between the contradictions of the recent past and the anxieties that populate the future, can give life to new and original experiments for Amazonian architecture¹⁷.

Balbina Environmental Protection Centre, cross section and north elevation.
Limnology laboratory.



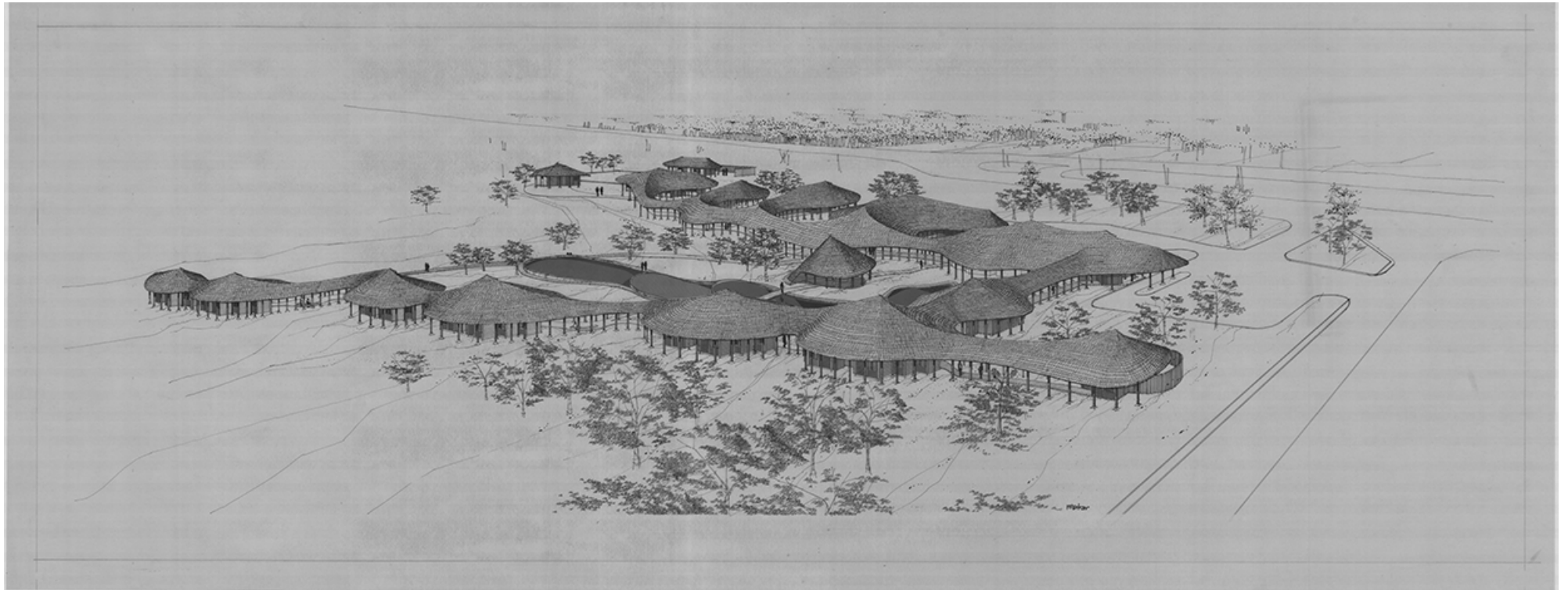
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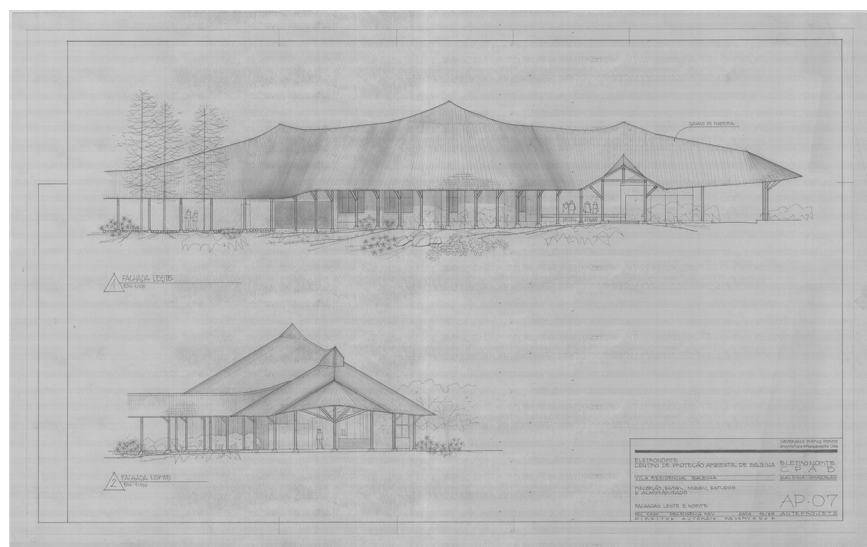
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| SEVERIANO MARCO FORTO Arq. Gêner. e Paisag. Urban. | |
| ELETRONORTE CENTRO DE PROTEÇÃO AMBIENTAL DE BALBINA | ELETRONORTE CPA 5 |
| VILA RESIDENCIAL BALBINA | BALBINA/AMAZONAS |
| LABORATÓRIO DE ENFERMIA - POLIVALENTE | |
| FACHADA NORTE E CORTA TRANSVERSAL | AP. 27 |
| Esc. 1/100 DE SEVERIANO MARCO FORTO | ANTEPROJETO |
| DIREITOS AUTORAIS RESERVADOS | |

Balbina Environmental Protection Centre, general perspective.
Publication design.



Balbina Environmental Protection Center, east and north elevations.
Reception, living room, museum, study rooms and warehouse.



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✱ <https://jeanmicheljarre.com/amazonia>, accessed 19 June 2022.

✱ J. Daudén, *Brazilian Houses: 9 Examples of Residential Vernacular Architecture*, <https://www.archdaily.com/909366/brazilian-houses-9-examples-of-residential-vernacular-architecture>, accessed 19 June 2022.

⌋ “A arquitetura para áreas rurais passa a optar por materiais locais, técnicas construtivas de baixo impacto, tipologias tradicionais e estratégias passivas de proteção solar e de ventilação. O arquiteto mineiro Severiano Porto, formado na Universidade Federal do Rio de Janeiro (UFRJ), foi um dos primeiros arquitetos brasileiros a se preocupar, de forma sistemática, com a preservação do meio ambiente amazônico.” A. Guerra, *Arquitetura brasileira: tradição e utopia*, in “Revista do Instituto de Estudos Brasileiros,” 76, 2020, pp. 158-200, here p. 172.

⌋ L. Neves, *The New Vernacular of Severiano Porto in the Amazon*, in W. Weber, S. Yannis (eds.), *Lessons from Vernacular Architecture*, Routledge, Oxon 2014, p. 166.

⌋ Ivi, p. 173.

⌋ San Francisco Museum of Art, *Domestic Architecture of the San Francisco Bay Region: A Catalog of an Exhibition Held at the San Francisco Museum of Art*, Sept. 16, Oct. 30, 1949; E.K. Thompson, *The Early Domestic Architecture of the San Francisco Bay Region*, in “Journal of the Society of Architectural Historians,” 10(3), 1951, pp. 15-21.

✱ B. Rudofsky, *Architecture without Architects: A Short Introduction to Non-Pedigreed Architecture*, The Museum of Modern Art / Doubleday, New York 1964. It should be noted that Rudofsky’s research, although strongly oriented towards an international vision, does not report any mention of Amazonian architecture.

⌋ *NAMA and the architecture of the Amazon*. MIT Architecture | Spring 2021 Lecture Series. A Research Studio conversation with Marcos Cereto, Angelo Bucci, and Xhulio Binjaku, moderated by Cristina Parreño; <https://www.youtube.com/watch?v=o5VipN-X3bQ>, accessed 19 June 2022.

⌋ <https://nucleoama.weebly.com/about.html>, accessed 19 June 2022.

✱ <https://architecture.mit.edu/events/nama-and-architecture-amazon>, accessed 19 June 2022.

✱ <https://www.archdaily.com/457077/rio-bonito-house-carla-juacaba>, accessed 19 June 2022.

✱ “Nos diversos edifícios, a arquiteta Cristina Xavier optou por fundação de concreto estante à umidade, estrutura em madeira de baixo interesse comercial e coberturas com telhas cerâmicas ou em palha provenientes de palmeiras nativas muito usada na região, alternativas

adequadas ao alto índice pluviométrico e calor intenso do local. Equipes de profissionais e consultores de centros urbanos maiores treinaram equipes locais para o uso de técnicas construtivas locais e modernas;” A. Guerra, *op. cit.*, p. 174.

⌋ El Croquis, *Estudio Gustavo Utrabo (2015-2020). Ojo cerrado para verte mejor – Eyes shut to see you better*, 207, 9/3/2021; <https://www.archdaily.com/978232/xingu-canopies-estudio-gustavo-utrabo>, accessed 19 June 2022.

⌋ <https://agentettransforma.org.br>, accessed 19 June 2022.

⌋ C. Magni, *Collegio Fondazione Bradesco – Fazenda Canuanã*, in “Casabella,” 877, 9/2017, pp. 27-36, here p. 27; A. Guerra, *op. cit.*, p. 173.

⌋ C. Magni, *op. cit.*, p. 30.

✱ From the project report, <https://www.instagram.com/p/CZ-SlVlUzQ>, accessed 19 June 2022.

⌋ A. Acciavatti et al., “How will we live together? Biennale architettura 2021,” Venezia 2021, vol. 1, pp. 274-275.

⌋ <https://www.somatic-collaborative.com/projects/manuel-a-new-contract>, accessed 19 June 2022.

✱ All drawings by Severiano Porto courtesy of Nucleo de Pesquisas e Documentação, Departamento de Projecto de Arquitetura, Faculdade de Arquitetura e Urbanismo, Universidade Federal do Rio de Janeiro.

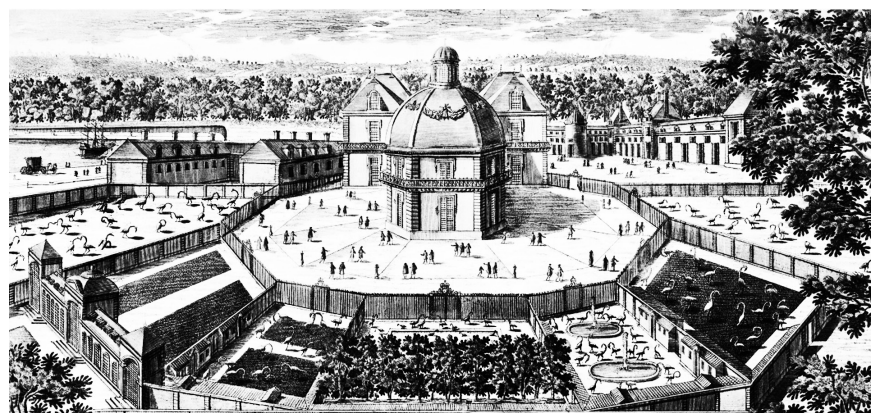
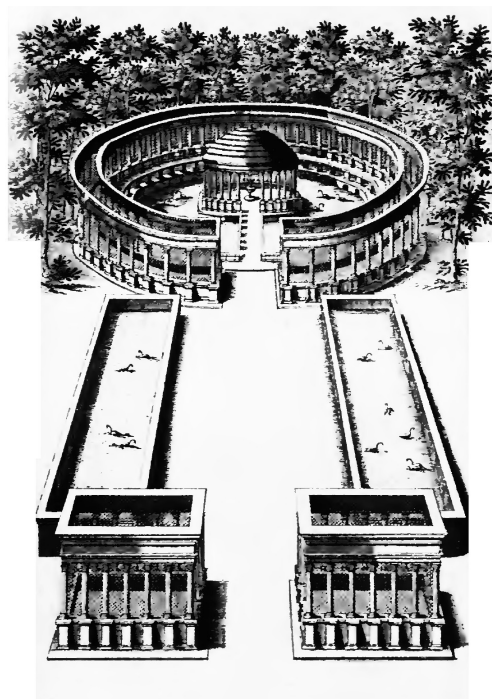
CEDRIC'S SENSE FOR WILDERNESS: THE ROLE OF FORESTS IN PRICE'S SEARCH FOR COEXISTENCE

JACOPO LEVERATTO

In the beginning, before the city, the village, and the architecture itself, there was a forest, no mystery in this regard. As it is no mystery that at the beginning of human civilization, immediately after and out of the forest, there was a garden. Not only because it was in a garden that the earliest narratives of creation placed the first humans[†], but also because, according to anthropologists, it was through gardening that humankind definitively became sedentary and started its millenary process of modification of the natural world[‡]. And not by clearing it, as one may think, but by distilling its very essence within the physical boundaries of an enclosed system[§]. Historically, in fact, despite changes in terms of size, composition, and characterization, gardens have always represented places in which a selection of the natural environment has been grown, accumulated, and guarded. At first for alimentary reasons, as they were meant to store and protect the livelihoods of a community, and then, over the centuries, according to the different ways in which different cultures have interpreted their relationship with nature. All of this with the only invariable feature of being a walled area, as also testified by the etymology of the term, and the sole constant principle of recalling as much as possible a sort of “paradise.”[¶] The same word that Greeks borrowed from Persians to indicate the closed “special parks, planted with palm trees, vines and flowers” in which they used to keep wild animals in captivity[‡], and which therefore served to indicate a first possible form of domesticated coexistence among different species.

From an architectural point of view, the story of this form of coexistence is the story of a particular spatial typology, which in the second half of the seventeenth century took the name of “menagerie”, although its origins go back long before that date.[‡] During the second millennium before Christ, for example, Queen Hatshepsut of Egypt founded in Thebes the first known zoological garden. But even Alexander the Great, Kublai Khan, and Emperor Wen Wang of the Chou Dynasty in China were all founders of similar parks, without mentioning, with regards to the Middle Ages, Charlemagne, Frederick II, or Henry III of England[†]. It was only, however, after 1662, when Louis XIV of France created a garden for exotic animals at Versailles, that the term began to be commonly used, in its strictly domestic reference[¶]. As it was further evidence of the form of possession that characterized the relationship with the natural world, which was already materialized by the distinctive features of all the royal menageries, from the architectural shape of the cages to the pan-optical plan of the compounds. And solely in 1828, with the opening in London Regent's Park of the first scientific zoo in the world,

Models of panoptic gardens, from Varro's aviary to Versailles' menagerie,
from G. Loisel, *Histoire des Ménageries. De l'antiquité à nos jours*,
Doin et Fils, Paris 1912.



the perspective in this regard began to change, both because of its urban location, which was opened to the public in 1847, and for its layout, which tried to recall a natural environment. Therefore, it was probably not a coincidence that the first attempt to create a form of architecture for animals that could be molded on their behavior was realized exactly in this venue. And precisely by the man who, according to Rem Koolhaas, more than anyone “changed architecture [...] with fewer means”¹.

Everything began more than a century after the opening to the public of Regent's Park zoo, when the Royal Zoological Society, in 1960, informed the Duke of Edinburgh of their intention of building a new “birdcage” for the zoo, and he suggested to contact his brother-in-law, Anthony Armstrong-Jones, who studied architecture for a while, before failing his second-year exams². And the latter, in turn, went for help to his old friend and contemporary at Cambridge, Cedric Price, who had just started his practice after a period at Erno Goldfinger's. Here, and previously at the Architectural Association, Price had already begun to develop an original and personal approach to architecture, which he saw more as a process than as a form³. And whereas his contemporary fellows, like Alison and Peter Smithson or the members of Archigram, had still shown “their own distinctive interests and individual tastes”, he had manifested, by contrast, a strong “preference for dismantling architecture, and making it disappear into unconventional systems” of construction⁴. For this reason, in accordance with Lord Snowdon, he immediately dismissed the idea of designing a traditional birdcage, fashioned on the interpretation of domestic spatial typologies and classical architectural elements, to work on something completely new. Thus, calling in the equally young engineer Frank Newby from Group Seven, the two began to work on a high-tech walk-through aviary, which could be made “for” and “by” the movements of its winged inhabitants.

In this regard, it must be said that, even though Snowdon Aviary was the first walk-through structure to be built in the United Kingdom, the idea was not totally new for that age, as in 1904 the Smithsonian Institute had already built an accessible flying cage for St. Louis World's Fair⁵. The true novelty, on the contrary, was bringing animals to the center of the formalization process, which made Price's project stand out from an architectural point of view, also from its most refined predecessors. Like the circular gorilla house, for example, designed in 1933 by Berthold Lubetkin for the same zoo, which gave the animals a sterile and harmoniously proportioned setting, through the balanced arrangement of curved and intersecting volumes. Or the

The Snowdon Aviary designed by Cedric Price.
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The Snowdon Aviary designed by Cedric Price.
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spiraling shape of his renowned penguin pool, which served to showcase birds in a sort of grand choreography organized for the visitors. Because each of them was based on the ethological principles formulated by the Swiss zoologist Heini Hediger, for whom animals' biological functions related to territoriality were not compromised in captivity, as long as the cage could guarantee a certain distance among its occupants[¶] [¶]. But also on the common belief that the duty of artists was that of replacing the real world, spoiled by natural cycles of decay, with their own creations. For this reason, even in the best cases, the protagonists of this kind of design had always been the visitors, whereas animals had only been used to activate architecture by contrast, as they were actors on a stage.

Conversely, Price and Snowdon's idea on the contrary could not be more distant[¶] [¶]. After having chosen a rectangular lot on a steeply sloping canal bank of Regent's Park, they in fact began to sketch ideas for a sort of natural habitat covered by a curving tensile structure, the shape of which was meant "to accommodate the natural arcing flight patterns of birds"[¶] [¶]. Then, once satisfied with their basic concept, they asked Newby, who was studying Richard Buckminster Fuller's discontinuous compression systems, to design the technological solution that could guarantee the maximum volume for free flying, by providing a fifty-meter cleared space, stretching some thirty meters high, with multi-level perches at both ends[¶] [¶]. Obviously, while contemporarily ensuring adequate transparency and permeability, which could both make the animals feel free and allow their view also from the outside. The solution was thus a diaphanous and netted enclosure made of a welded aluminum mesh, which had to be fixed to pre-tensioned steel cables, and draped across a composition of aluminum tubes, arranged into four different tetrahedral compression structures at the corners, all equipped with roosts[¶] [¶]. And these would in turn have been anchored, by means of metallic legs, both on the ground near the canal and to a high retaining wall backward, which, despite having been designed to simply reinforce the cliff, ultimately turned out to be the real spine of the project.

By crossing the whole site longitudinally and rectifying its topography, the wall would in fact have inevitably cut the space into two different levels. For this reason, Price decided to use it to separate the flows of people and water from that of birds, while still following the same direction, as defined by the position of the perches. On the one hand, by placing on top of its ridge a pedestrian path for visitors, which spanned the two opposing entrances with the broken line of a zigzagging cantilevered

walkway. And on the other, by excavating at its base the bed of a stretched artificial lake, which had to be fed by two converging streams of water. The first springing from an indent of the cliff in the form of a continuous vertical cascade, and the other, slower and gentler, pouring from a small rectangular pool near one of the entries and dropping through a series of shallow square platforms emerging from the wall like gigantic steps. All this while trying to keep the rest of the space as natural as possible, by simply integrating the existing vegetation with irregular patches of trees and bushes, in a layout that was substantially indifferent to the upper structure or the system of flows. As if he were simply not interested in achieving any sort of formal synthesis between the different elements of the whole, which ultimately took the shape of a strange, hybrid forest.

When, in 1965, it was finally completed, the Aviary was thus unlike any other building that one could have seen. Nevertheless, its structure was almost immediately praised both by visitors, who could eventually enjoy an immersive view of forty-five different species of birds in a natural habitat, and by Price's colleagues, who appreciated his particular solution. If compared to the façadism of the Mappin Terraces or to the International Style of Lubetkin's pool, his project in fact represented a remarkable conceptual leap for that age[¶] [¶]. And even though his friend Reyner Banham wrote about it as a "belated contribution to the Arcadian tradition" belonging to the unorthodox stream that dated back to Joseph Paxton[¶] [¶], Price's approach was so evidently alien to any arbitrary formal allegiances and technological determinism that the Aviary soon proved to challenge any possible form of traditional categorization[¶] [¶].

And by contrast, as Charles Jencks wrote, it ended up representing the first declaration of independence from all the previous concepts of "enclosure, monumentality, stasis and even imagery," by which Price "put forward an idea of 'servicing' instead of architecture" that reflected his sense of "absolute freedom"[¶] [¶]. And along with that, of course, one of the most original architectural interpretations of the garden meant as a system of relationships among different species.

This is because, despite being a zoological garden, and therefore little more than a cage, all the Aviary's distinctive features seem to be designed to contradict the fundamental principle of this spatial typology, which is its inherent anthropocentrism. Its distributive layout, for example, in a reversal of objects and subjects of the project, makes people look confined instead of animals. On the one hand, through the articulation of flows in section and not in a plan, which physically separates the path for

visitors from the rest of the space and its actual inhabitants. And on the other, because of the material conformation of this element, which immediately denounces its estrangement from both the stereotomic character of the landform and the light tectonic of Newby's canopy. Stretching from only two points of support, with a series of abrupt alternate right and left turns, the concrete ribbon of the walkway in fact crosses the volume of the building almost without touching its forest of trees and tubes, to not interfere with its life. An intention further underlined not only by its structure, which is independent from the upper one, but also by its formal matrix, which does not find confirmation in any other element of the building, as well as its width, which is not dissimilar from that of a corridor. As though it were meant to make people cross the Aviary, instead of staying there, in a sort of separate and suspended dimension that does not really belong to the whole space.

This is also because, unlike most of the gardens before it, the layout of the Aviary does not depend on the form of its enclosure, but it precedes it. Traditionally, in fact, the interior composition of enclosed gardens was based on a geometric process of partition that derived its logic from the formal configuration of the outer wall. And the division of the whole area in smaller fields, as well as the definition of paths, followed the same principle in a sequential progression that went from the outside inward, both in terms of formal and temporal priority. In Price's project, on the contrary, the enclosure does not work as an ordering element, but it rather reflects the life inside its boundaries, in a process of formalization that followed the opposite direction, from the ideal movements of its inhabitants to the shape of their shelter. First, through its general conformation, which, recalling a veil spread over a flock, looks like being molded by the same birds while taking off. Then, for its consistency, which, besides providing transparency to this sort of crystalline cloud, gives the idea of a breathing layer capable of a quick change and response. And finally, because of its very structure, which, by following Buckminster Fuller's tensegrity principles, borrows from the natural world an adaptable mechanism for developing a lightweight frame that could in principle be dismantled and reassembled according to changing needs. All this, in a symbolic more than a substantial way of prioritizing animals over humans, which Price pursued by using architecture as a figurative means to manifest the intention of enabling their possibilities rather than determining their expected behavior, through the image of a forest.

In other words, as he later did by imagining a new kind of

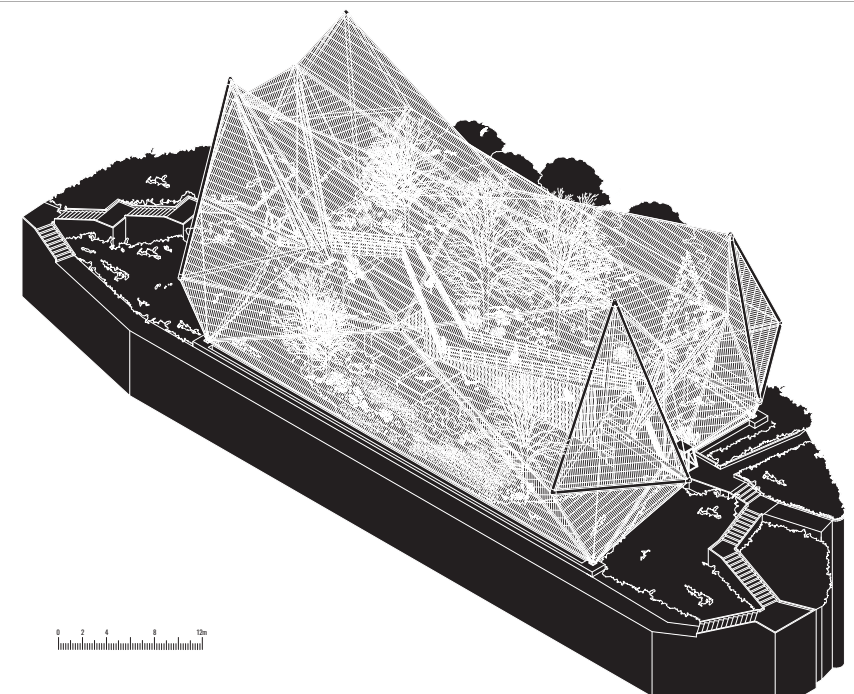
theater and a new type of university with his projects for the Fun Palace and Potteries Thinkbelt, through the Aviary, Price realized the idea of a garden that was totally innovative for that age. And exactly as the former projects sprang from a new way of seeing the processes of learning and being educated, his first major project emerged from a novel way of interpreting the human relationship with nature, and not from the manipulation of traditional architectural typologies. Whereas, however, in all these following projects design developed in a programmatic dimension that was largely indifferent to formative characteristics, in the Aviary his poetic of indeterminacy still unfolded through a masterly work on the traditional constitutive elements of garden architecture, like the conformation of the "wall" and the composition of the layout, which immediately opened the way for further concrete realizations, following the same direction. To such an extent that, when two years after its completion, Buckminster Fuller was entrusted with the design of the United States pavilion for the Montreal Expo, he looked back to his admirer's example and his design principles. While Price, in contrast on the contrary, kept questioning and developing the role of design when dealing with nature, in a vision that repeatedly recurred in his practice, through a sort of symbiotic form, across different landscape projects. At least until 1989, when, for the regeneration of the Hamburg Docklands, he started devising the first conscious, although unrealized, architectural project of "restitution" ever imagined, which he referred to as a particular form of "relief from development".

The story is well known also in this case. At that time, in fact, the city of Hamburg was seeking new opportunities for its redundant historical harbor, and for this reason, urban authorities organized an architectural masterclass with sixteen design teams invited, among which the one led by Price. Instead of defining a masterplan for redevelopment, however, his team listed a series of questions for citizens and authorities to ask what growth exactly meant for them. And after two years of work, they presented to the public a project, called "Ducklands Experiment," that instead of repurposing the docklands through housing, offices, and other tertiary functions, it proposed the creation of a river marshland in the center of Hamburg, to become a resting place for migratory birds. At first by demolishing the existing buildings and structures, with the exception of key railway links and some listed constructions, and later by leaving the site to be gradually submerged by the Elbe River. All this by making use of adjustable gantries that would have served, initially, to remove soil from the riverbed, then for planting and husband-

ry, and finally as adaptable walkways for visitors who, as in his Snowdon Aviary, would have remained only occasional spectators of an environmental setting, or a “third landscape”¹¹, “constructed” exclusively for birds, with nothing but water, sand, and plants. And through both a final principle and a modal strategy that in the following years would have often been replicated, though never fully realized.

What Price did in both projects, in other words, was not to change the essence of this space, which he still meant as an enclosed system to grow and protect a selection of nature. What he modified, by contrast, was the human role in this picture, which was symbolically removed from the center of the project and substituted with the end result of this selection, both as the subject and object of a design agency. And he did all this by essentially working on the material conformation of the garden, which he transformed from a confining to a defining device. A responsive rather than an ordering element that had necessarily to emerge from a projective process of definition generated by the actions, the interactions, and the mechanisms of growth and exchange of its inhabitants. For this reason, from an architectural standpoint, these projects had little to do with the subsequent typological development of zoological gardens, which progressively tended towards a closer imitation of natural environments. Because, despite a deeper concern for animals’ well-being, the great majority of zoos has been revolving around the visitors’ experience as the main parameter. Whereas Price’s projects, by contrast, represented an evolved and hybrid form of “forest” in which he sought to experiment new modalities of coexistence¹². Within an artificially mediated continuum between nature and culture that finally extended the range of design beyond the limits of predetermination.

Axonometry of the Snowdon Aviary, drawing by Jacopo Leveratto.



✠ The story of Eden, for instance, as depicted in the second chapter of the *Book of Genesis*, recalls also a previous Mesopotamian myth about a primordial man who was placed in a divine garden to guard the Tree of Life. In this regard, see R. Davidson, *Genesis 1-11. Commentary by R. Davidson*, Cambridge University Press, Cambridge 1973.

✠ J.R. Harlan, *Crops and Man*, American Society of Agronomy, Crop Science Society of America, Madison 1975.

⌋ G. Clément, *Une brève histoire du jardin*, Éditions du 81, Paris 2011.

⌋ The terms garden, paradise and enclosure are strictly interrelated. Garden, for instance, stemmed from the German *Garten*, which meant enclosure. And paradise, which comes from the Greek *paradeisos*, directly referred to the Persian *pairīdāezā* that meant enclosure too. *Ibid.*

⌋ G. Loisel, *Histoire des Ménageries. De l'antiquité à nos jours*, Doin et Fils, Paris 1912, p. 45.

⌋ E. Baratay, E. Hardouin-Fugier, *Zoo. A History of Zoological Gardens in the West*, Reaktion Books, London 2002, pp. 41-42.

✠ W.N. Mann, *Wild Animals in and out of the Zoos*, Smithsonian Institution, Washington DC 1930.

⌋ The term menagerie in fact derived from the French *ménage*, which was used to refer to housekeeping.

⌋ R. Koolhaas, *Introduction*, in H.U. Obrist (ed.), Re: CP, Birkhäuser, Basel 2003, p. 6.

✠ S. Mullin, *Cedric Price*. 1934-2003, in "Arq," vol. 7, 2, 2003, pp. 113-118.

✠ S. Mathews, *From Agit-Prop to Free Space. The Architecture of Cedric Price*, Black Dog Publishing, London 2007, pp. 30-34.

✠ A. Isozaki, *Erasing Architecture into the System*, in H.U. Obrist (ed.), *op. cit.*, p. 45.

✠ National Zoological Park, *Records. 1887-1966*, Smithsonian Institution Archives, Washington DC 1966.

✠ H. Hediger, *Wild Animals in Captivity*, Butterworth, London 1950.

⌋ Referring to another project, Price in fact significantly stated that the "acceptance of the appropriateness of a finite container for the business of living [...] was a symptom of a particular half-century of artifactual history, during which there appeared to be a recognizable equation between the compatibility of the dimensions of inventions [...] and the kinesthetic sensibilities displayed by their inventors." Quoted in S. Mathews, *op. cit.*, p. 38.

⌋ Ivi, p. 35. Flight patterns were studied

with the contribution of the eminent conservationist and ornithologist Peter Scott.

✠ For background, see *Aviary at the London Zoo. Designed by the Earl of Snowdon and Cedric Price*, in "Architectural Review," 127, 1961, pp. 417-418; *Northern Aviary, London Zoo. Designed by: Lord Snowdon, C. Price & F. Newby*, in "Architectural Design," 9, 1965, pp. 451-459; and S. Hardingham, *Cedric Price Works 1952-2013. A Forward-Minded Retrospective*, AA Publications, London 2016, pp. 87-103. The structure was probably inspired by the extraordinary tensile aviary in steel and nylon, built by Vittoriano Viganò in 1954 for Milan's X Triennale. See A. Stocchi, *Vittoriano Viganò. Etica brutalista*, Testo & Immagine, Turin 1999, pp. 22-23.

✠ R. Landau, *Engineers and Architects: Newby + Price*, in "AA Files," 27, 1994, pp. 25-32.

✠ H.A. Steiner, *For the Birds*, in "Grey Room," 13, 2003, pp. 5-31.

✠ R. Banham, *Aviary, London Zoological Gardens*, in "Architectural Review," 138, 1965, p. 186.

✠ "In Price's work, the connection between the complexities and potential of the question, and the physical (or nonphysical) end product, is very close, and because [...] his work is consciously problem-solving [...], the importance of seeing each product as a problem-understanding and question-asking process [...] is necessary if it is to be understood." R. Landau, *New Directions in British Architecture*, Studio Vista, London 1968, p. 76.

✠ C. Jencks, *Modern Movements in Architecture*, Penguin, London 1985, p. 285.

⌋ For an extensive view of the history of this spatial typology, see R. Aben, S. de Wit, *The Enclosed Garden. History and Development of the Hortus Conclusus and its Reintroduction into the Present-day Urban Landscape*, 010 Publishers, Rotterdam 1999.

✠ R. Buckminster Fuller, *Tensegrity*, in "Portfolio and Art News Annual," 4, 1961.

✠ An approach that Price, some years later, called "anticipatory architecture," to indicate a way of designing that is "concerned with reactions, not merely initial appetites." C. Price, "Building Design," 1071, January 11, 1991, p. 19.

✠ For an extensive view of these two projects, see S. Mathews, *op. cit.*

✠ In summary, Fuller's idea for the World Fair was building a symbolic replica of what he liked to call "spaceship earth." For this reason, to represent the whole biosphere, he designed a sort of planetary garden, which was enclosed by the double layer of a huge geodesic dome. And he fashioned its structure, to emulate the homeostatic mechanisms of a natural system, as a permeable and intelligent skin operated by light sensors. In this way, by adapting to changing sun

conditions, the structure would have maintained a constant temperature, like a real living organism. J. Massey, *Buckminster Fuller's Reflexive Modernism*, in "Design and Culture," vol. 4, 3, 2012, pp. 325-344.

✠ Such as Mills, Serre II, and IFPRI. In this regard, see R. Middleton, *To Earth*, in S. Hardingham (ed.), *Cedric Price Opera*, Wiley, London 2003, pp. 28-29.

✠ Cedric Price Architects, memorandum 13th July 1990, Canadian Centre for Architecture, File 153: Duck Land, folder DR2004:0876.

⌋ C. Price, "Building Design," 1071, January 11, 1991, pp. 18-21. Through his friend, the ornithologist Peter Scott, whom he met while working on the Snowdon aviary, Price knew that this was a stopping route for migrating birds. In a talk at the Architectural Association in 1990, he had already claimed: "Have Ducklands, never mind Docklands! Ducklands. In the middle of Hamburg. You know. A wonderful new link, a new lung! What a wonderful generosity of the city – hasn't cost a thing! Saved us a fortune!" In S. Hardingham, *Cedric Price Works... cit.*, p. 432.

✠ G. Clément, *Manifeste du Tiers paysage*, Éditions Sujet/Objet, Paris 2003.

✠ J. Leveratto, *Posthuman Architectures. A Catalogue of Archetypes*, ORO Editions, Novato CA 2021, pp. 66-87.