

The Representation of Staircases in the Architecture of Lina Bo Bardi

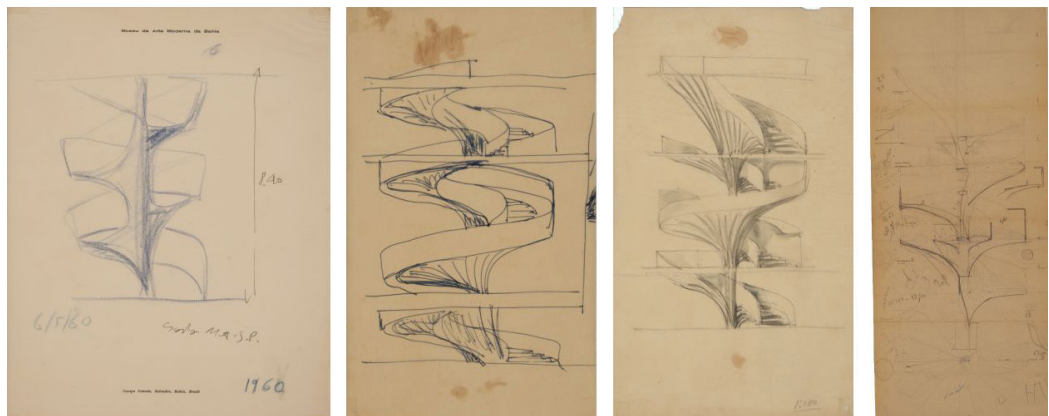
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Abstract

This paper presents results of the research that investigated the representation, design and geometry of the staircase in the work of the architect Lina Bo Bardi. The staircase not only as a functional element of circulation and connection between floors, but as well a structural, expressive and symbolic element. The research was organized in steps and procedures for its conclusion. i-reading of Lina's texts; ii-bibliographic review on the themes; iii-survey of stair drawings at the Instituto Lina Bo Bardi in São Paulo; iv-visit to the buildings designed by Lina; v-analysis and discussion. The analysis was based on four dimensions of the staircase design: form, function, technique and perception. In this text we present the drawings of the architect referring to the stairs of different projects, relating theory and design.

Keywords

Lina Bo Bardi, staircase, architecture drawing, design representation.



Drawings by Lina Bo Bardi for the access staircase to the São Paulo Museum of Art. -Version not executed. Source: Instituto Lina Bo and P.M. Bardi.

Introduction

“The stairs have always fascinated the man.
The grand staircases of the cities, the stairs of thrones, of the temples
...are a fascinating element, and I have always been,
as an architect, fascinated by the ideas of a staircase”
[Lina Bo Bardi, *The stair*, 1987]

Achilina (Lina) di Enrico Bo (1914-1992) was one of the most important architects in the Brazilian scenario of the 20th century. Graduated architect in the University of Rome, she obtained an expressive career in the Italian and Brazilian editorial scene, especially in Habitat magazine. Lina gained notoriety in Brazil, arousing the interest of researchers in the investigation of her work.

The texts written by Lina reveals to us view on architecture. The respect for the place and the local culture are important qualities present in his thinking and practice. Due to her Italian background, we observed a strong understanding and care regarding pre-existence, interior design, furniture design, especially interested in construction and execution. As a modern architect, Lina expresses her understanding of architecture as a structure, with continuous and free spaces and forms.

Lina Bo Bardi's drawings are a distinct chapter in her production. They are drawings with a playful expressiveness, spontaneous and colorful. All drawings presented here were collected at Instituto Lina Bo Bardi, which organized and made this material available on its public website. In 1987 Lina published the text *The Stair* (Gregório de Mattos Theater) in the *Architecture and Urbanism Magazine* of São Paulo. In this text the architect discusses the stair in architecture and in the city, as a structural, symbolic and also functional element. This text aroused the interest in studying the stairs in Lina's architecture. In this article we present the results of the investigation on the architecture of Lina Bo Bardi in Brazil, focusing on the drawings of the stairs. Thus, a research was organized that involved steps and procedures for its conclusion: i-reading of Lina's texts; ii-bibliographic review on the themes; iii-survey of stair drawings at the Instituto Lina Bo Bardi in São Paulo; iv-visit to the buildings designed by Lina; v-analysis and discussion. In this text we present the study referring to the staircase drawings of the *Casa de Vidro* (1951), *Solar do Unhão* (1959), *São Paulo MASP Art Museum* (1968), *Casa do Benin* (1986), *Teatro Gregório de Mattos* (1986) and *SESC Pompéia* (1986).

The analysis was based on four dimensions of the staircase design: form, function, technique and perception.

Staircase Studies

“Dreams of stairs have often been encountered in psychoanalysis”.
[Gaston Bachelard, *The Poetics of Space*, 1993]

The study of stairs in architecture is presented in the literature by several approaches and in abundance. In Vitruvius' book you can already find teachings related to stairs and this fact remains in the Classic Treaties of Architecture. Technical drawing books offer lessons on how to calculate a ladder correctly, how to draw up a technical drawing at different scales, and present different types of shapes. More recently articles and books also address issues related to safety and accessibility standards.

There are books and papers with specific approaches. More recently the researcher Vincenzo Cirillo develops a series of studies and publications on stairs. The author analyzed the representation of the stairs in the Italian treaties from the 16th to the 18th centuries, relating principles and masters theory [Cirillo 2017; Cirillo 2018].

Giuseppe Antuono [Antuono 2017] analyzes shape and geometry on the helical staircase 'Lumacha' type of the San Carlo alle Fontane in Rome, by Borromini.

Cornelie Leopold [Leopold 2018] analyzed the geometry and typology of stairs, relating them to the visuals, perception and experience of spaces, in a didactic experience with modeling.

The staircase in the architecture of Lina Bo Bardi

“Escadas de caracol
Sempre
São misteriosas: conturbam...
Quando as desce, a gente
Se desparafusa...
Quando a gente as sobe
Se parafusa”
[Mário Quintana, *Escadas*, 1980]

Bruno Zevi [1984] highlights the importance of the path for reading and appreciating spaces and forms, that is, temporalizing architecture, the known “the fourth dimension” of space, defined by Zevi. The staircase as an element that allows free movement and visual materializes important concepts of this period.

For Lina, the stairs were not merely functional elements, but they should be treated as an expressive element in space, for its structure, materiality or form.

Involving the temporalization of space, the idea of path, movement, and circulation as the protagonist of spaces and forms is a typically Modern concept. The stair materializes the idea of movement through space, the fourth dimension.

The *Glass House* (1951) - The open staircase

The *Glass House*, the residence of the couple Lina Bo and Pietro Maria Bardi for many years, was known by this name for its glass facade that seems to float suspended on thin pillars. On a slope, a path carefully defined by the architect leads the visitor to the access to the house, which is made by an open ‘U’ shaped staircase (fig. 1), which directs the eyes to different views until reaching the entrance door of the living room. The house plan is designed with an open patio that organizes the program between the social, intimate and service sectors. The program practically organized on a suspended floor that houses the garage area. The staircase located next to the patio in the void configured in the center of the slab.

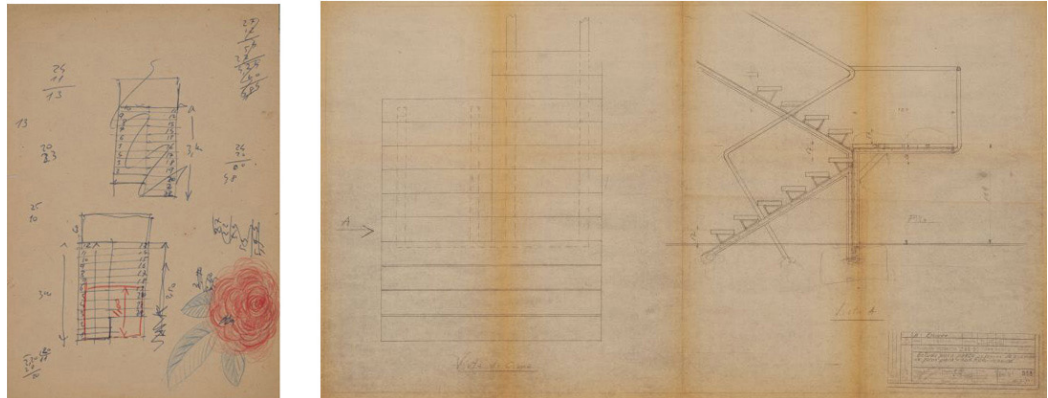
The drawing (fig. 2) reveals the staircase was planned proportionally to the building, with a leading role in its structural expression, shape, geometry, in addition to the trajectory that directs the eyes to the landscape, offering a no obvious route to the main access of the house.

The access to the house is via a staircase whose structure is made of iron and natural granite [Bo Bardi 1953].



Fig. 1. The Glass House.
Source: Photos by the
authors, 2013.

Fig. 2. Drawings by Lina Bo Bardi for the stairs of the Glass House. Source: Instituto Lina Bo and P.M. Bardi.



Solar do Unhão Museum of Popular Art (1959) - The flower staircase

“The study of the flower staircase for MASP was developed in Salvador, in collaboration with the Bahia office of architects Carlos Campos and Guarani Araripe, and refers to the wonderful staircase that later, in 1963, would be carried out at Solar do Unhão” [de Oliveira 2019].

It is an important architectural complex, whose construction dates from the 16th century. In the 1960s it was restored and transformed into a Documentation Center on Popular Art and Technical studies. In a spiral with a rectangular plan, supported by a central support, a new staircase was planned and built, maintaining the use of wood (figs. 3, 4).

“The existing staircase was demolished to be replaced by the famous spiral staircase of the square plan, which occupies one of the modules of the central structure of the main floor” [Anelli 2016, p. 100].

Fig. 3. Drawings by Lina Bo Bardi for the stairs of the Solar do Unhão Museum of Popular Art. Source: Instituto Lina Bo and P.M. Bardi.

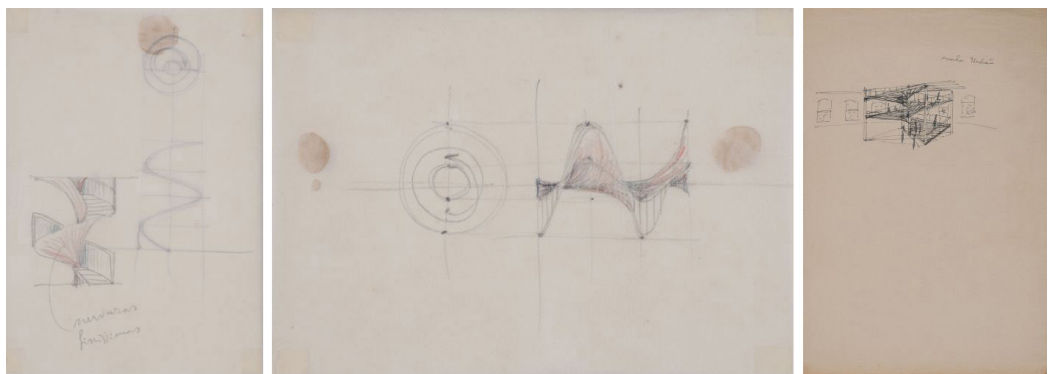
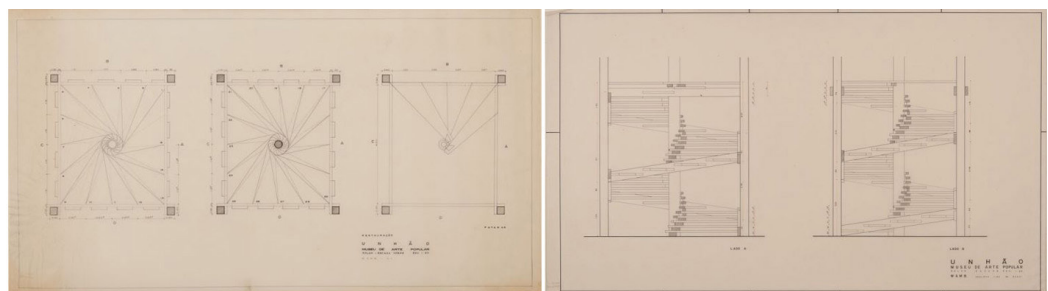


Fig. 4. Drawings by Lina Bo Bardi for the stairs at the Solar do Unhão Museum of Popular Art. Source: Instituto Lina Bo and P.M. Bardi.



São Paulo Art Museum MASP (1968) - The ramp-staircase

“In this part, also note the two stairs with 14m of cantilever each, embedded in a base, which in turn works the twist”
[Bo Bardi 1957-1967].

The building that houses MASP is located on the site of the old Belvedere Trianon, on Paulista Avenue, and the work was completed in 1968. Known for its large, suspended volume and free ground floor, structured in two large porticoes.

The MASP program was organized on two floors above the ground floor square, in the suspended volume, and two floors below. An 'L' shaped staircase leads the visitors to the upper galleries. On the lower floors, there is a large exhibition space with double height ceilings where the two large intersecting stairs (fig. 5) are located, in addition to other spaces such as two auditoriums, restaurant and bookshop.

“The imposing square-looking hall –with 22 m × 24 m and double height– called the Civic Hall, has an independent entrance through the small square on Carlos Comenale Street, as already informed, is very little used. From this entrance, you can see, directly ahead, the impressive “X” of the cantilevered stairs / ramps– they do not rest on the mezzanines of the level above, towards which they are directed– with the red railings [Cárdenas 2015, p. 55]. The stair-ramps that join the Civic Hall to the mezzanines are structural beams of the large swings that these elements make up, painted in bright red, like a large “X”, free at the upper ends” [Cárdenas 2015, p. 99]

“Between the Civic Hall and the mezzanines are the large “X” staircases, in addition to the entrance, now disabled, that would lead directly to the Civic Hall, level 9.50” [Cárdenas 2015, p. 99].

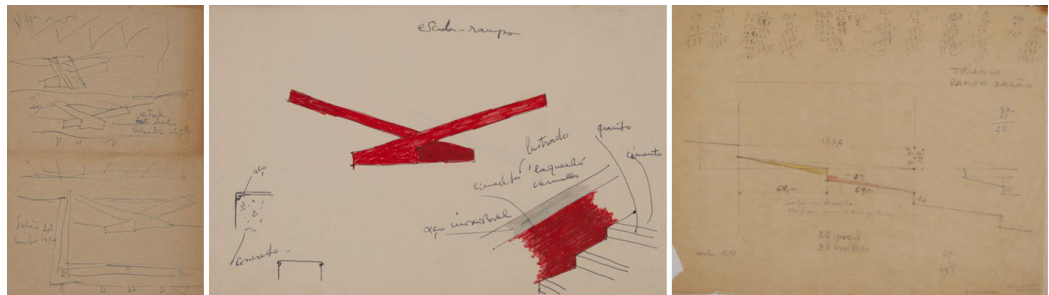


Fig. 5. Drawings by Lina Bo Bardi for the internal staircase at the São Paulo Museum of Art. Source: Instituto Lina Bo and P.M. Bardi.

Casa do Benin (1986) - The continuous staircase

Opened in 1988, the Benin house is based in a historic mansion in *Pelourinho*. In this cultural space we find an exchange of Brazilian and African cultures, through the important Afro-Brazilian artistic and cultural collection that is maintained by the Gregório de Mattos Foundation, and the Pierre Verger Museum Space. Lina Bo Bardi carried out the studies for the adaptation and renovation of the construction and proposed a straight blue metallic staircase (fig. 6) to connect the upper floors.

The means of communication between the three floors, that is the stairway, marked in the previous project in the middle of the ground floor, was moved between the ‘columns’ and the stone and earth wall as a continuous, modern, but in line, way. “The continuous stairs of Colony time” [Bo Bardi 1988].

Two 19th-century buildings on the corner of Praça do Pelourinho, the main square of Salvador, were converted into Afro-Brazilian cultural centres. One of the advantage of these two four-storey buildings is their prominent location in the historical Baroque centre of the city.

Bo Bardi retained the historical facades and inserted a new circulation, staircase, exhibition spaces (a long distinctive main space) and a library and restaurant that promotes the culture of the African country Benin (the origin of a majority of slaves) [Lehmann 2016, p. 60]. Here, Bo Bardi collaborated with the musician Gilberto Gil and the French philosopher Pierre Verger; and highlights are the Casa do Benin and Casa do Olodum, both Bahian African cultural centers with the insertion of spectacular new staircases [Lehmann 2016, p. 67].

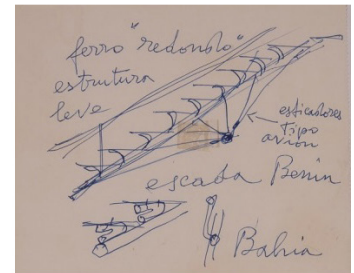
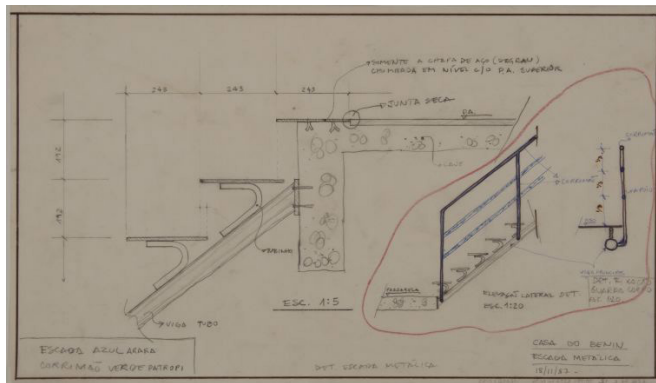


Fig. 6. Drawings for the stairs to Casa do Benin. Authors Lina Bo Bardi / Marcelo Ferraz / Marcelo Suzuki. Source: Instituto Lina Bo and P.M. Bardi.

Gregório de Mattos Theater (1986) - The staircase that invites

Built in 1986 and designed by Lina Bo Bardi, the Gregório de Mattos Theater is located in a historic area of Salvador. Its design presents an innovative proposal of the environments, with no fixed location for the stage.

Well, when I thought of the stairs, I thought of a structure that was a little different, that is, a supporting part and a supported part, like a folded sheet of paper; that is, the steps [Bo Bardi 1986].

The staircase (fig. 7) is the protagonist element of the access hall with a winding spiral shape, which develops around a red, concrete and inviting square pillar: Lina mentions her inspiration for Nervi's structure on the stairs of the Berta stadium (nowadays Artemio Franchi stadium) in Florence, but emphasizes that it is different.

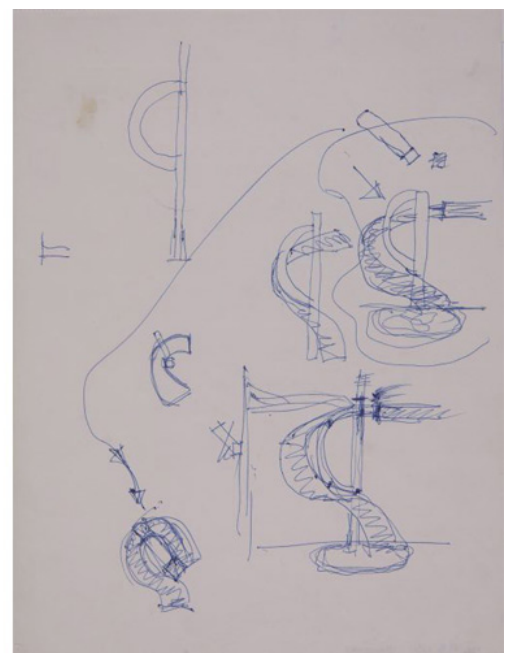
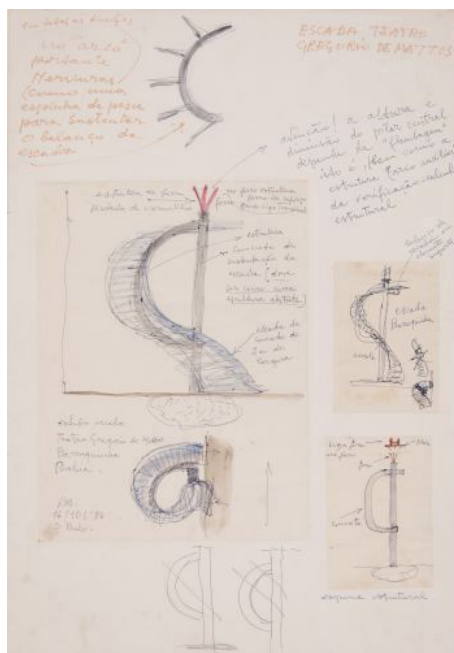


Fig. 7. Drawings for the staircase at the Teatro Gregório de Mattos. Authors Lina Bo Bardi / Marcelo Ferraz / Marcelo Suzuki. Source: Instituto Lina Bo and P.M. Bardi.

SESC Pompéia (1986) - The stair of freedom

When the image of *SESC Pompéia* comes to mind, one immediately reminds the concrete walkways connecting two buildings. These elements of circulation and connection, the walkways, mark the scenery of this complex.

“Thus, the two ‘blocks’ emerged, that of the courts and swimming pools and that of the changing rooms. In the middle, the *non aedificandi* area, and ... how to join the two blocks? There was only one solution: the ‘aerial’ solution, where the two ‘blocks’ embrace each other through prestressed concrete walkways” [Bo Bardi apud Rubino 2009, p. 153].

However, there is a very expressive staircase (fig. 8) at *SESC Pompéia*, which we can say represents Lina’s thought about space, form and architecture. A red steel helical stair that is self-sufficient and discreet in its own way.

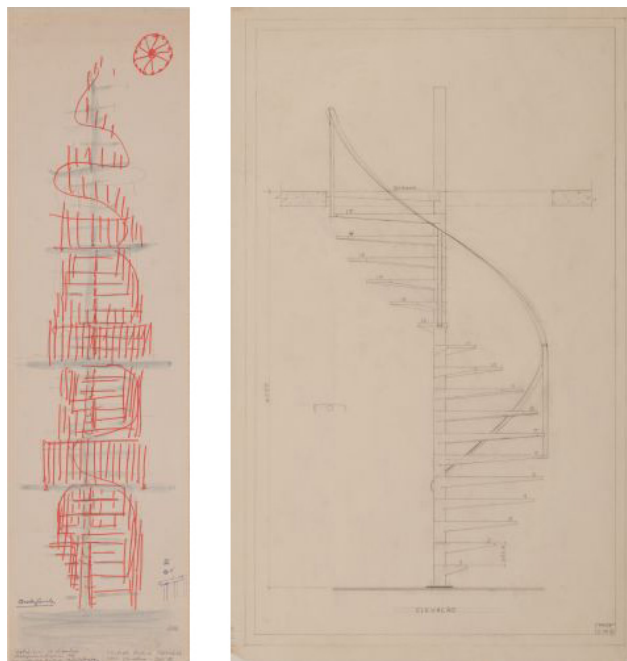


Fig. 8. Drawings for the *SESC Pompéia* staircase. Authors Lina Bo Bardi / André Vainer / Marcelo Ferraz. Source: Instituto Lina Bo and P.M. Bardi.

Discussion

“Spiral staircases, which are also said to be a spiral, are made in some round places and in some oval places; sometimes with the column in the middle, and sometimes empty, in the narrow places it is usually used because they occupy less space than the straight ones, but they are a little more difficult to climb” [Andrea Palladio, *Os quatro livros da arquitetura*]

The analysis developed was based on four dimensions of the staircase design revealed by Lina’s drawings: form, function, technique and perceptual. The most used and expressive designs to reveal your intentions regarding the stairs are the elevations. We also find vertical section, plans and details in perspectives.

The resulting shape reveals the adopted geometry and volumetric expressiveness, of games of light and shadow, full and empty, with appeal to the sculptural character.

The plan and location reveal the function of the staircase as an element of circulation and connection between floors. The geometry of the stairs influences and directs the movement, direction of the user and their visuals.

The design of the route, the trajectory, the framings, and visuals reveal the intentions related to the sensations and perceptions of space. Freedom of movement through space and observation. The space experience. The stair’s materiality, its structural expression, its self-support, reveal the technique.

Through the observation of the drawings of Lina's stairs, we can say that the architect had a special interest in the spiral shape, with expressive apparent structure and revealing its materiality and fittings. The helical staircase with a center, usually with a central pillar / support. The spiral path and path offer and promote multiple visuals and different levels, which seems to be related to the freedom of modern unobstructed space.

The spiral seems to be related to the notion of experience through Lina's space, with continuous, free, unobstructed, dynamic and intense movement.

We can observe this constant search for the spiral in drawings for other projects. In the studies for the external staircase to the São Paulo Art Museum (figs. 9, 10) Lina reveals this intention.



Fig. 9. Drawings by Lina Bo Bardi for the access staircase to the São Paulo Museum of Art. -Version not executed. Source: Instituto Lina Bo and P. M. Bardi.

In the studies for Masp, Lina suggested making the main access staircase by a large helical staircase with an open center, with the same characteristics as that employed by Reidy at MAM. The diameter of the helical staircase suggested by Lina in that hypothesis, which was largely accentuated for the comfort of users, exceeded the direction of the structural axes, which, obviously, made the proposal unfeasible, Lina went for another solution [Cárdenas 2015, p. 23]. In the 1980s Lina developed studies (fig. 10) for the *Centro Cultural Belém* contest in Portugal, and again we can notice drawings that reveal her studies with spiral stairs. In this case around the tower:

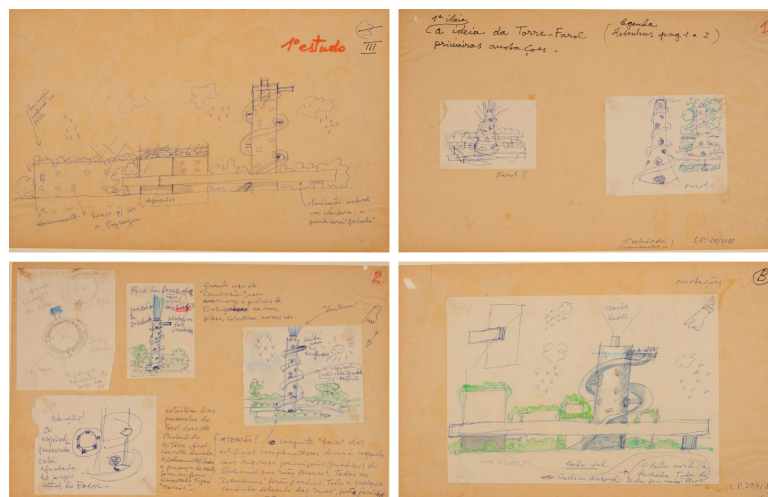


Fig. 10. Study drawings by Lina Bo Bardi for the Centro Cultural Belém Competition in Portugal, 1988. Source: Instituto Lina Bo and P.M. Bardi.

It was possible to observe through the drawings (fig. 11) available at Instituto Lina Bo and P. M. Bardi, the architect expressed her interest in circular geometry. In addition to the spiral stairs, the design of the circular house, in addition to the Church of *Espírito Santo do Cerrado* (fig. 12), are some of the examples of this investigation by the circle.

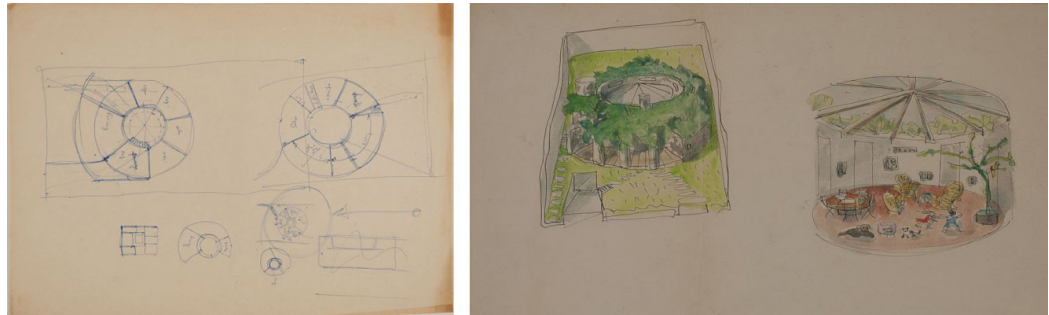


Fig. 11. Study drawings by Lina Bo Bardi for the Casa Circular project, 1962. Source: Instituto Lina Bo e P.M. Bardi.

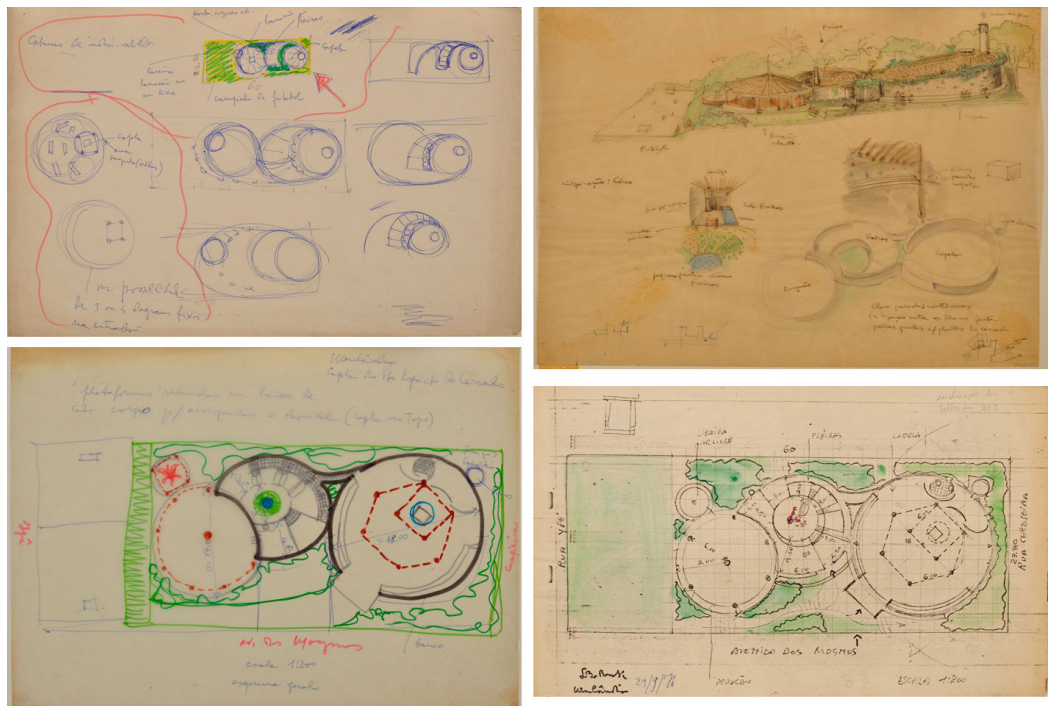


Fig. 12. Study drawings by Lina Bo Bardi for the Igreja do Espírito Santo do Cerrado project, 1976. Source: Instituto Lina Bo e P.M. Bardi.

Final Remarks

“The circle is related to the divine: a simple circle has since ancient times represented eternity, since it has no beginning and no end”.
[Bruno Munari, *The circle*, 1964]

This text offers an interpretative study of the architecture of Lina Bo Bardi in Brazil, based on the original approach to the study of stairs through Lina Bo Bardi drawings. Through the analysis, it is possible to state that Lina had a special interest in the design of the stairs, as an expressive element in its structure and functionality. The helical shape with a center appears to be the type most explored by the architect in her drawings. The expres-

siveness of the helical staircase's shape, its full and empty spaces, light and shadow, seemed to capture the architect's interest. In addition to the perceptual question of the route by the helical staircase, which allows different sensations and visuals of the space.

The stair, this element of circulation materializes concepts, establish a careful relationship between spaces, architecture and the city, in addition to corresponding the intentions declared by the architect herself in her writings and statements. The symbolic and the metaphorical are present in its architecture. The staircase as an element of connection and circulation also offers a symbolic interpretation of bringing together, and at the same time creating internal and external spaces, promoting the movement of people, continuous, dynamic, and unobstructed.

Acknowledgments

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