#19
FROM WRIGHT TO GWATHMEY SIEGEL: THE CASE OF MOVEMENT IN THE GUGGENHEIM MUSEUM

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ABSTRACT
When Frank Lloyd Wright designed the Solomon R. Guggenheim Museum in New York City (1943-59) he defined and activated space simultaneously because the movement of bodies - suggested in his words before sketches existed - configured the space. Activation referred to the user’s experience, which was utilized by Wright since his Taliesin Fellowship (1931) where students learned through embodied knowledge by focusing on their receptive and experiential basis. The main goal of this paper is to evaluate to what extent the extension by Gwathmey Siegel and Associate Architects, in 1992, altered Wright’s original concept for the building. Museums are complex structures whose spatial layouts seem to have a probabilistic effect upon patterns of visitors’ movements, which consequently affect awareness and encounter. In tune with these aspects, we argue that Wright adopted three main premises to design the Guggenheim: influence how people moved through its layout; consider the configuration of galleries as differentiated social spaces, and assure the organization of spaces and artwork a decisive role in the experience of the visitor. We utilized configuration analysis of floor plans and field observations, including recording static activities in the atrium, tracing 12 pedestrian flows, and counting number of visitors in relation to their chosen means of ascending the space. Besides comparing the original 1959 layout with its later addition, this paper brings some of Wright’s ideas for the emblematic building to light, to find out, in agreement with the architect, that the system is highly intelligible due to its key design feature, the atrium. Oppositely, interpersonal interaction and copresence are weaker away from this space, where concave isovists are recurrent. Despite alterations intended to strengthen its connection with the main gallery, the segregation of the old monitor in relation to the main gallery is maintained as thought by Wright. On the other hand, some findings also point towards discrepancies: Contrary to Wright’s idea of visitors floating upwards in the elevator and descending through the ramp (main gallery), we found that the majority of visitors used the ramp to ascend in...
space. Consequently a greater interaction with the artwork happened during the ascending movement, as on the way down visitors had little or no interaction with the art, establishing regular contact with the atrium instead. Findings also challenge the emblematic study by Peponis (1993) in regards to the museum’s circulation being impeditive of probabilistic effects in the layout on exploration and encounter, as visitors frequently stopped to take pictures of the space, themselves and their peers, even while located at different ramp levels.

KEYWORDS
Space syntax, museum architecture, museum studies, morphology

1. INTRODUCTION
The goal of this paper is to discuss from a syntactic perspective the singular spatial configuration conceived by Frank Lloyd Wright for the Solomon R. Guggenheim Museum, in New York City, by comparing its inaugural 1959 layout to its later renovation and addition, in 1992, by Gwathmey Siegel and Associate Architects. The study encompasses historic documents, on-site observations and configuration analysis of ground and main gallery floor plans (Figures 1 and 2).

Space Syntax studies have shown that spatial layouts seem to have a probabilistic effect on the patterns of people’s movement and encounter. This theoretical field is interested in the analysis of general functions that surpass a particular building type and has proved to be very helpful in understanding movement patterns, consciousness and users’ encounters, aspects rarely privileged at the initial phases of a project (Peponis, 1993, p.54). We argue that, contrary to this, Wright designed the Guggenheim under the concept that movement and visual interaction of bodies ought to define space.

We begin by contextualizing the museum building and the Guggenheim itself, which sets the basis to investigate these three issues in Wright’s layout. Following, we present and discuss the analysis through convex, axial and visibility maps, isovists, photographs, and tracking of museum visitors, and then reach some conclusions.

Figure 1 - 1959 Ground and main floor plans (Weston, 2011, p.89, edited by author)
2. THE MUSEUM AS A SOCIAL OBJECT

For King (1984), as society grows differentiation takes place, leading to the growth of institutions. Furthermore, socialization and culture, with their associated activities of education or the creation, storage and distribution of knowledge, give rise to schools, universities, libraries, laboratories and museums. Holanda (2013) notes that buildings have attributes that can be captured directly from their configuration, from their syntax (i.e., they are more or less permeable to movement or transparent to vision, have certain dimensions and proportions, simple or complex volumes, etc.). On the other hand, labels (home, school, factory, hospital, museum) that delimit a social domain overlap with this physical structure, guaranteeing semantic attributes, not directly legible from this structure.

Markus (1993, p. 171) classifies museums as buildings of collection that represent visible knowledge, arguing that these are based on three organizing components: programs of use and circulation, shapes and texts. While the first serve classification, the shape of the building contributes to its organization through floor plans and volumes and by itself, when it often unites the container and the contents. As for texts, besides instructions and textbooks, inventories, lists, guides, indexes and catalogues may be part of the whole collection.

Hillier and Tzortzi (2011) suggest the use of the spatial syntax theory and methodology in the analysis of museum layouts as configurations of related spaces, stating that layouts can be used to research the social functioning and cultural significance of museums. They argue that museums are structures with the potential of both a pedagogical device to communicate knowledge and narrative, and a transmitter of non-narrative meaning in the form of a spatial and social experience.

Museums are structured around continuous spaces that follow some kind of narrative. In the Guggenheim, the narrative is movement that embodies Wright’s ideal of space and material continuity (Siry, 2009), therefore narrative enters architecture by the way in which space is structured to achieve specific effects on users’ experience and perception. The architect utilized a circumcentric pattern of vertical spiralling movement, independent of the actual experience of the subjects who would use space, but, on the other hand, he organized it from his point of view as an observer. Getting closer to the core of the architect’s conception implies in understanding the space he created from the sequential unfolding of information as bodies move in that environment (Psarra, 2009).
If circulation can be considered as a kind of skeleton that forms the supporting structure of a building, an organizational mechanism in its layout, reflecting overall spatial organization (Jiang and Liu, 2010), it plays a key role in understanding the Guggenheim museum as a social space. As shown in Wright’s earlier accounts, circulation guides the concept of the building, materializing itself in continuous vertical spiral galleries, which become a hybrid of exhibition spaces and circulation. The efficiency of a circulation depends on how much it evidences destinies for the user that, because of this, can move towards its objectives. Thus, circulation can effectively reveal how spatial patterns and configurations affect these users through movement (Natapov et al., 2015).

2.1 WHY LOOK BACK?

As buildings are historical events that have precedents which relate to time and space, we turn briefly to the origins of the Solomon R. Guggenheim Museum for clues on Wright’s peculiar design choices, specifically his take on the relationship between art exhibition, movement of people and social encounters. This relationship connects with some of the questions raised by Hillier and Tzortzi (2011) that we intend to investigate: Does space influence how people move through its layout? Do galleries work as a significant social space? Does the sequential organization of spaces and placement of artwork in space have an important role in the visitor’s experience?

In regards to design, Peponis (1993) refers to three desirable spatial considerations in museums, also important in our approach to Wright’s concept: linkage between exhibit spaces and the building as a whole via foyers and major circulation routes; balance between the appreciation of the architectural object and effective exhibitions; and the interface between building scale and the varying scales of the exhibits.

2.2 A BRIEF HISTORY OF THE BUILDING

Following the fin de siècle tradition, when private clients began hiring architects to design buildings for their newly compiled collections, the Solomon R. Guggenheim Museum (1943-1959) was meant to house the artworks of the eponymous businessman, one of the first American collectors of abstract art. The building referred to by Wright as a modern gallery (Levine, 1996), originally intended to be a memorial for its founder, displaying the paintings he had acquired with the help of the German consultant and future director of the Guggenheim Foundation, Hilla Rebay, whose connections with Europe’s avant-garde abstract art and her major influence both in Solomon’s collection and his soon to be, as she intended, museum-temple.

The design process was long, with four major versions named schemes A through D, and a series of revisions to scheme A. From June 1943 to early 1944, ideas remained in writing, with the presentation of the first preliminary studies taking place after the building site on 5th Avenue in Manhattan was acquired, in March 1944. According to Levine (1998, p. 323), these schemes “were all based on the same parti; only their geometries and brightly colored marble exteriors differed. One was hexagonal, the other three variations on a circle... The key element was an approximately eight-story ‘tower’ occupying the right half of the site” where galleries were located around an open atrium topped with a glass dome. Scheme “A”, further developed and approved by the client in July 1944, showed two main circular volumes - galleries and atrium at South, and the administrative tower at North - and a third, smaller cylinder containing an elevator that protruded outwards, West of the gallery tower (Levine, 1998; Pfeiffer, 1986; Siry, 2009; The Guggenheim, 2009). (Figure 3)

In a press conference in 1945, in New York City, a model on display showed a major change to scheme “A”: the two towers were switched in North-South direction and the smaller cylinder was rotated by 30 degrees. Surrounded by a slower ramp, the elevator was probably the most integral part of the design. Several revisions took place after this presentation, notably the return of the two main volumes to the original N-S orientation.
After the death of Solomon Guggenheim in 1949, the remainder of the building site was purchased and the Foundation started changing directions, which led to Rebay’s resignation and the hiring of James Sweeney, a former curator for the Museum of Modern Art (MoMA), in 1952, the same period the overall layout that would end up being built was established. As changes in the museum policy and program continued, Wright and Sweeney disagreed on issues especially regarding the way paintings were hung. After a few more revisions, construction began in 1956. Wright died in 1959 prior to the museum’s opening later that year.

Figure 3 - Solomon R. Guggenheim Museum various schemes from 1944 through 1952 (Levine, 1996, edited by author)
2.3 SEARCHING FOR MOVEMENT

Wright was formally hired in June 1943 and before the building site was defined, he wrote a letter to Rebay on January 20, 1944 in which we identify similarities with some of the aspects mentioned by Hillier and Tzortzi (2011) and Peponis (1993): ‘A museum should be one extended expansive well proportioned floor space from bottom to top — a wheelchair going around and up and down, throughout. No stops anywhere and such screened divisions of space gloriously lit within from above...’ (Pfeiffer, 1994, p.6). The idea of movement of people is evident, emphasized by the presence of a wheelchair moving with ease in a spatial layout with partitions detached from ceilings, conforming a unified well-scaled space where exhibitions and building are linked continuously.

In June 1958, he emphasized a curvilinear three-dimensional space (in a spiral), the visitor’s movement and the relationship of this type of circulation with artwork viewing: ‘Walls slant gently outward forming a giant spiral for a well-defined purpose: a new unity between beholder, painting and architecture. As planned, in the easy downward drift of the viewer on the giant spiral, pictures are not to be seen bolt-upright as though painted on the wall behind them. Gently inclined, faced slightly upward to the viewer and to the light in accord with the upward sweep of the spiral, the paintings themselves are emphasized in themselves and not hung “square” but gracefully yield to movement as set up by these slightly curving massive-walls.’ (Pfeiffer, 1994, p.7)

The notion of the museum as a social space is in Wright’s reference to the type of activity (see paintings yield to movement) and social gatherings (spectators moving in a continuous space subject to interpersonal encounters) that a spatial layout can facilitate. The words also suggest a balanced appreciation of architecture and artwork, although privileging the scale of the building in relation to the varying scales of exhibition spaces.

Besides the circulation layout Wright envisioned, the interior is extremely controlled, having visitors almost entirely removed from visual contact with the outside and placed in a self-contained world removed from the public space of the street, a strategy similarly implemented in the VC Morris Gift Shop (San Francisco, 1948-1949), the only previously built project by Wright with a similar circular two-deck ramp (Siry, 2009).

If a labelled space can reproduce specific types of social relations and power amongst various categories of users (Markus and Cameron, 2002), the monitor, a tower housing offices, staff rooms and (subsequently removed) apartments for Solomon and Hilla, certainly did so. After the renovation in 1990s when former offices were converted into exhibition spaces and store, maintaining its central void, the previous vigilance of higher hierarchy staff at top floors over those working below was replaced with that of security guards and staff over the visitors on ground level store, also attracting potential shoppers from upper galleries. (Figure 4)
3. THE GUGGENHEIM SYNTAX

3.1 SOME IDEAS ON SPACE SYNTAX

Two basic notions pervade the Spatial Syntax theory regarding space: it is an intrinsic aspect of human activity and experience and it works not only according to the properties of this or that space, but to the relationships between all the spaces that conform a layout. A spatial structure can be represented in convex, axial and isovist dimensions, as people move in axial lines, interact in convex spaces, and see visual fields that change as they move through built environments (Hillier and Vaughan, 2007, p.3). Using graph theory to describe layout configurations makes it possible to investigate the correlation between space configuration and social behaviour.

Intelligibility, a correlation coefficient between connectivity and integration, helps identifying how easy it is for someone in a local position to understand the overall structure (Dalton et al, 2015; Al-Sayed et al, 2014). According to Hillier and Hanson (1984), an intelligible system allows people to find their way in a complex building, as a function of the relationship between local and global spatial properties. In an intelligible environment immediate visual stimuli can provide clues about what is outside the immediate visual field. In contrast, in an unintelligible environment, local visual cues do not relate to their larger spatial structure or may be deliberately misleading.

Visibility graph analysis (VGA) refers to the visual properties of a layout, specifically to the intervisiblity between each pair of points in relation to the visual configurations of the environment. Three topological VGA measures are relevant: clustering coefficient, integration and control. The first one indicates how much visual information is lost when someone moves from one location to another, so that convex isovists have a high clustering coefficient, whereas pointed isovists have a smaller one. Integration computes the fewest number of connections or steps that need to be traversed to reach one node from another and control relates the area of the neighbourhood to the area of the immediate vicinity, indicating those in which visitors can have a wide view of the space (Al-Sayed et al, 2014)
3.2 MEANS AND METHODS

We used the DepthMap (Turner, 2007) and JASS software platforms to generate maps and justified graphs. During the months of December 2015, January and April 2016, we also employed unobtrusive site observations, tracked 12 museum visitors, counted number of people that opted for ramp or elevator as main means of ascending the space, and captured static photos to register patterns of occupancy in the ground level atrium.

3.3 RESULTS

3.3.1 CONFIGURATION ANALYSIS

In the Guggenheim’s 1959 and 1990s plans the most integrated spaces are located in or around the atrium, confirming its structural condition within the system. When the annex was added (1990s) and previous offices and bridge connecting these to the main floor galleries became exhibition spaces, the ring-like integration core was maintained and new integrated exhibition spaces emerged off of the atrium, increasing the spatial adjacency in previously segregated spaces. In both sets of plans the semi-circular elevator hall also presents a high degree of integration, coinciding with Wright’s emphasis on such element. Except for a couple of distribution halls, there are fewer integrated service spaces, all located further from the atrium.

Figure 5 - Convex, axial and visibility maps of 1959 (left) and 1990s (right) layouts measured by integration.
Figure 6 - Justified graphs of 1959 (left) and 1992 (right) layouts.
In the 1959 layout the monitor tower and main galleries around the atrium were separated with a void on the ground floor and a bridge at upper levels, as Wright’s goal was to emphasize the propulsive and sculptural nature of the bipolar arrangement between the two volumes conforming these spaces. That is why two separate maps were used for the 1959 ground floor plan. This segregation remains on the ground floor even after the monitor’s function shifted from offices to store. On the 1990s first floor plan, though, segregation was diminished with the addition of new exhibition spaces, both in the monitor and in the new annex.

Prior to the major 1990s renovation, in 1974, the garage entrance below the ramp between the two towers (monitor’s and main galleries) was enveloped with glass to house a bookstore and a tea room and what might seem like a discreet addition, eventually put a negative emphasis on Wright’s idea (Newhouse, 2006). In fact, since 1960s there had been attempts to broaden the connection between these two elements. In 1965 the Justin K. Thannhauser collection was added to the museum and following William Wesley Peters’ design (former architect at Wright’s Taliesin), a new exhibition space was placed on the main floor bridge between the rotunda and the monitor, where Wright’s 1959 layout showed a library. This alteration gave a static character to the experience of seeing art that Wright had sought to avoid, interrupting the continuous flow of the spiral by cutting an arch through a wall adjacent to the main ramp to give access to this new collection.

The convex maps show that the change of function was not able to fully modify the structural properties inherent to these spaces, implying that there is pertinence in considering space as an independent medium capable of suggesting certain social relations in themselves. (Figure 5)

Even though the spiral-like museum, washed by a highly controlled light source coming from the atrium’s dome, as conceived by Wright, is maintained, the justified graphs of the 1959 layout in comparison with 1992’s show that the transition from administrative function to exhibition space of the monitor created two major spaces with different scales which generate distinct experiences for the museum visitor. While in the main galleries the space is continuous and offers almost no route option other than following the flow imposed by the ramp, in the other there is a sequence of relatively connected exhibition spaces with more route alternatives. (Figure 6)

Axial analyses are based on the smallest number of longer walkable lines covering all convex spaces of a layout and its connections. Lines that have more connections to their immediate neighbours will have higher connectivity values and those with fewer connections will have lower degrees, indicating the potential occupation of a space by visitors. Thus, more integrated lines tend to provide social gatherings and more intense flow of people. The ground floor axial maps show highly integrated lines in the atrium. Overlapping photographs of the atrium taken from level 6 with the most integrated lines in that space confirms this condition as they illustrate the gathering of people in such locations. Contrarily, both monitor and service spaces have low degrees of integration, ratifying the segregation originally intended by the architect. (Figure 5 and 7)

Although axially the configuration was not changed drastically, with the removal of former office partitions, the 1990s renovation added a new cluster of longer integrated lines linking the main tower to the monitor. The Aye Simon Reading Room, designed by Richard Meyer in 1978 in a former archive turned broom closet, seems to be the space taking most advantage of this new condition. Although it is entered from a very small punch through the main gallery wall, as visitors come out of the permanent exhibition into the adjacent space, probably walking along such lines, they all seem compelled to enter the small room, where books and digital media are available for consultation.
In museums the intelligibility of a space is intricate as it becomes accessible to the exploration, and its content more available to searching (Wineman et al. 2015, p.2). Highly intelligible environments facilitate navigation because most routes lead towards or through central locations. Low intelligibility indicates that central locations depend on fewer routes, which are less connected (Natapov et al. 2016, p.5). Considering .50 as a threshold for intelligibility (Hillier and Hanson, 1984), when correlation is greater than it, the system is intelligible; when it is lower it is unintelligible. Using the Spearman's Correlation Coefficient formula, the 1990s ground floor layout scored .68, indicating its high intelligibility, due mostly to the circular configuration designed by Wright.

Isovists and maps of visibility also help understanding spatial cognition from a certain position, because ‘In museums visual fields and spatial structures modulate patterns of movement and associated modes of seeing and understanding.’ (Wineman et al. 2015, p.48). The importance of this type of analysis, highlighted by the concept of copresence is emphasized by Choi (1997, p.5): ‘The extended pattern of copresence, which includes people visible from a space, however, is related not only to the visual connections between spaces, but also to the integration of spaces in the layout as a whole. Thus, the spaces which integrate the building most powerfully may not have more people in them but they make more people visible. The awareness of other people becomes related to the experience of spatial structure. This seems to suggest a different form of virtual community, which may be based on visual encounter rather than encounter that is bonded in individual spaces.’

Overlapping the spaces of greater visual integration from VGA maps with axial maps, they coincide with locations where clusters of very active lines cross each other. As these active nodes tend to provide social gatherings and more intense flow of people, they facilitate the condition argued by Choi (1997) that more people visit spaces that are more integrated. We also observed some of the structural spaces in the 1959 ground and 1st floor plans through their isovists, including: entry vestibule, ticket counter, centre of atrium, bottom of ramp, elevator and stairway halls, and store (ground floor); outside High Gallery, inside High Gallery, balcony at ramp, elevator and stairway halls, main gallery ramp, library’s entry vestibule, library and monitor offices (1st floor). Isovists on ground floor close to the atrium proved to be mostly...
convex. On the 1st floor, the more convex isovists are located at the High Gallery, main gallery on ramp and in the library. As convex isovists have a high clustering coefficient, little visual information is lost when visitors move in these locations. (Figures 7 and 8)

As we look at spaces further from the atrium on both floors, isovists become more pointed, allowing for more visual information to be lost, therefore, making it more difficult for interpersonal encounters or copresence. Taking these considerations to the 1990 layout, if on the ground floor this segregation could be considered positive, as there are two different functions (store and gallery/admission ticketing), on the upper floors, almost fully occupied by exhibition spaces, it is negative in relation to the spatial experience conceived by Wright and the purposes we consider fundamental in the design of a complex building: movement, encounter and consciousness, which ratifies the idea that the architectural project ‘operates against some background of legality and that this legality is itself rooted in the properties of form’ (Peponis, 1993, P. 54).

3.3.2 FIELD OBSERVATIONS

We performed random observations during several site visits and three specific procedures: Following 12 subjects in different hours of museum operation; counting of visitors at a gate located at the bottom of the ground floor ramp to verify the type of vertical circulation (elevator or ramp) chosen to initiate their visit, and caption of static photographs from a fixed point located on level 6 (the highest level accessible to the general public) overlooking the atrium at ground floor, where 23 images were recorded, with an interval of 3 minutes between each. As for the first, we followed 12 individuals (alone or in pairs) without predefined selection criteria, recording each route with photographs and simplified floor plans that indicate ascending and descending movement in space. The counting was performed at two times during a weekday, lasting 12 minutes average each. 241 people walked by the established gate, in a flow of 10 individuals per minute (Figure 9).

Even though choices might need to consider some filters – age, profile (tourists or locals) and free admission days - a key aspect in the understanding of the routes was the option to initiate the visit via ramp or elevator. Wright conceived the galleries based on the idea of movement in the spiral as a drift downward, wishing that visitors would rise with the elevator, floating vertically towards the glass dome above. We found that, even if not by a large difference, the majority of visitors (58%), in disagreement with the architect’s prediction, used the ramp to ascend in space. However, the idea of the rapid descent thought by Wright was somehow present, as most subjects descended faster than going up. The average observation time - which often coincided with the subjects’ total visiting time - for those who took the elevator was 50 minutes and 82 minutes for the ones that opted for the ramp.

A greater interaction with works of art seemed to happen at longer stops, during the ascending movement of those who took the ramp. These, in turn, established little or no interaction with the art as they moved downwards, having more regular and direct contact with the atrium, when they frequently stopped to take pictures of the space, themselves and their peers, even while located at different ramp levels. Although such interaction may indicate that 'the direction
of viewing is centripetal when one looks at the building and centrifugal when one looks at the paintings’ (Peponis, 1993, p. 59), it challenges criticism regarding the idea that ‘the major flow of circulation leaves no room for probabilistic effects of the layout over exploration and encounter’ (Peponis, 1993 p. 59). (Figure 10)

Coinciding with the major integration core on the convex map encompassing the continuous gallery ring, it indicates that the building was designed not only as a place for education and culture, typical in other museums of the period, but also as a social space that facilitates co-awareness and copresence, influential aspects in many cultural buildings to follow the Guggenheim later in the century through today.

Figure 9 - Maps and photographs used for tracking visitors, subject is a couple of tourists, aged 60-65, recorded from 11:27am through 1:27pm.
4. CONCLUSION

Although the Guggenheim interiors remain white as the modernist museums of the time - actually a change pushed by the museum direction that differed from the creamy tone imagined by Wright - its spiral ramp evolving around a central atrium that serves both as circulation and gallery space is an antithesis to the paradigmatic open spaces of MoMA or Mies van der Rohe’s Museum for a Small City.

Even if the linearity and ceremonial character of this configuration relates to 19th century museum layouts, the Guggenheim's singular shape and dynamics of visitors' movement offer a spatial experience that is unlike any other museum, providing a unique context as people move around and observe the artwork through the continuous sloped plane of the ramp and, simultaneously, interact with each other far beyond the low parapets of the ramp that enclose the voided high-ceiling atrium.

According to Zevi (2010), the Guggenheim refuses the inert mechanism of juxtaposed rooms, each enclosed in itself without continuity, proposing, instead, a walk through art, a path similar to a parking garage that wraps itself in an open spiral. Thus, the usual circulation connecting in-line galleries or long corridors in between them is replaced by a unique configuration that began to change the social implications of art, replacing the traditional box with a continuous spiral and paving the way for the museum as an environmental art that would be established two decades later with the Centre George Pompidous. (Newhouse, 2006)

It is true that Wright was not the first one to experiment with spiral schemes. Le Corbusier was working on similar ideas since 1920s that were built in the Museum of Western Art in Tokyo, which opened shortly before the Guggenheim. There are morphologic similarities between the two, especially in relation to the central hall of Corbusier’s project - in Tokyo a high ceiling square-shaped floor plan with two semi-enclosed balconies, also used for exhibitions, overlook the main exhibition spaces on the ground floor, where a ramp allows for modified views of both, and a skylight tops the sculpture galleries. Both museums mark – perhaps more the Guggenheim than the other - an intention to step away from the rigid box of conventional architecture, aiming to create a sense of continuity between space and time by eliminating formal walls and floor plans.
REFERENCES

Al-sayed, K., Turner, A. et al. (2014), Space Synthax Methodology, London: Bartlett School of Architecture, UCL.


Holanda, Frederico de. (2013), 10 Mandamentos da Arquitetura, Brasília: FRBH.


Pfeiffer, Bruce. (1986), Frank Lloyd Wright: The Guggenheim Correspondence, Carbondale: Southern Illinois University Press.


