THE FIOCRUZ MOORISH PAVILLION IN RIO - HISTORICAL ASPECTS, PHOTOGRAPHIC SURVEY AND CATALOGUE OF GEOMETRICAL ART APPLIED TO ARCHITECTURE

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ABSTRACT: This paper shows research undergone in architecture having as its objective the study of determined patterns found in different architectural elements of a building. The building “Pavilhão Mourisco” (Moorish Pavillion), is located in the neighborhood of Manguinhos in Rio de Janeiro, Brazil. This building is one of the rare Brazilian examples, that bring together with its ecclesiastical architecture, strong traces of the “mudejár” style. This paper describes the research phase where a historic and photographic survey of the building was performed. From this survey a classification was made under two aspects: firstly the material was classified by its characteristics as to its architectural elements. The architectural elements as “mudejár” characteristics found in the eclectic architecture of the building were separated by the following aspects: ironware, floors and wall covering. The second group of characteristics after the first classification demanded the whole group to be again classified and subdivided into types of geometrical patterns found. The classification patterns were: “rosáceas” (rosettes - composition on a plane surface using patterns), frieze (composition on a plane surface using patterns along one axis) and panels (composition on a plane surface using patterns along two orthogonal axes). The result of this classification was an abundant illustrative and didactic material about the building and its compositive geometrical examples.

Keywords: Mudejár, patterns, Pavilhão Mourisco (Moorish Pavillion), Fiocruz, symmetry.

1. INTRODUCTION
The Islamic world has a rich artistical tradition in geometrical and symmetrical ornamentation. Islamic architecture inherited drawing techniques from ancient times and shows in its ornamentation and embellishment art a profound connection with the sense of universality and dualisms strongly bounded to Sufism [10],[11].
Islamic art was introduced into Spain by the Islamics and was the foundation for the appearance of a unique art, the mudéjar developed by the Hispanic-Moorish people after the Christian recapture. The La Alhambra palace, is a true living example of this art in spite of it having undergone many refurbishments over the years. The term Alhambrism in use many centuries later when the world saw the Moorish revival was due to the fact of the palace inspiring the “Neo-moorish” that permeated Europe in the eighteenth century.
The “Neo-moorish”, sometimes combined with an eclectical architecture made its way to Brazil in the middle of the twentieth century. There are few “Neo-moorish” examples in Brazil; among them there is the “Moorish castle” as part of the building complex belonging to the Fiocruz Institute in Manguinhos in Rio. Despite its eclecticism, the so called “Moorish Pavillion” is considered to be one of the very rare
remaining Neo-moorish buildings. This paper describes the beginning of an undergoing research that studies the geometrical characteristics of the composite patterns found in this Brazilian Neo-moorish specimen relating them to the pictures of Islamic origin. At this point, an historical survey of the building was undertaken, digital records performed, cataloguing done, drawings in CAD and models reduced in MDF of certain encountered patterns made. During this first phase strong influence of Al Alhambra in Granada in Spain was observed on the architecture of the Moorish Pavillion, in especial the geometrical motives found in several of the architectural elements.

2. LA ALHAMBRA
The city of Granada was founded in 756 AD by the Moors in the region of Andaluzia in Spain. The Moors that conquered the Iberian Peninsula were of Arabic origin having come from East Sahara and Mauritania. The Nasrida dynasty (1145-1492), the last Muslim dynasty on the Iberian Peninsula, was responsible for the construction of the La Alhambra palace whose name means “the red one”. This name is due to the colour of the building made of red clay bricks dried in the sun. The best part of the palace with its splendid arabesques was built between 1248 and 1354, [5]. According to Domingo (2003a), between 1238 and 1492, Granada had twenty kings, but it was under Sultan Abu Abd Allah, known as Boabdil, that in 1492 the moors surrendered to the Catholic king and queen, putting an end to eight centuries of Muslim dominion in the Iberian Peninsula. With the Catholic reconquest, the Moors in the Peninsula, known as Mudejares were forced to convert to Christianity being thereonwards called the Moorish people. With the conquest of Granada, the Catholic king and queen took over La Alhambra as part of their symbolic image, incorporating it to the crown’s patrimony and maintaining it. Since then the palace underwent several refurbishments. The Christian conquest started a process of alterations to the architectonic complex of the city of Granada, covering with whitewash the unfinished works and erasing paintings and gilt. The Renaissance style was introduced. In 1821, an earthquake caused more damage and in 1828 restoration began [5](Figure 1).

Figure 1: La Alhambra, Granada, Spain [12].

The term “Alhambrism” is a consequence of a revival in the eighteenth century caused, according to [6], mainly due to the attention paid by Europe to the Islamic world with Egypt’s invasion by Napoleon, originating “Orientalism” which was triumphant in its several expressions. The bourgeois liberalism drew English, French and German scholars to the origins of Western culture that reflected a then unknown world, in art as in literature. In architecture the “Neo-muslim” style stood out socially and was much adopted in holiday resorts. Marked by exoticism, by luxury and sensuality, Neo-muslim constructions reminded Islamic Oriental paradisiac constructions. The ornamental basis of the Islamic revival is not defined by a particular architectonic style but by a formal adaptation to a structure of horseshoe arches, ceramics, tyles, polychromy, columns and so on. La Alhambra lives a new phase emerging again, on the one hand, due to Romanticism, and increasing the value of the European medieval past, on the other, due to the recognition of it being a monumental patrimony and transforms itself into the Spanish architectural reference in this context. Notwithstanding, with “Alhabramism” being recognized by some as a “Neo-moorish style”
or a Mudejar one, it has not been the intention to recover the reasonableness, functionalism, spatial organization or structural values of Islamic architecture; the main preoccupation has been to approach appearance and identification aspects thus proportioning an ornamental model from which medieval architects and decorators extracted elements do adorn their constructions.

3. THE “MOORISH PAVILLION”

The “Moorish Pavillion” is a building that is part of the Fiocruz Institute in Manguinhos, Rio de Janeiro, Brazil. According to [3] the architectonic language called “Neo-Moorish” appeared in Brazilian productions within re-readings introduced by Eclecticism which abounded between the second half of the nineteenth century and 1930. Putting the entire historical complex, of which the Pavillion is its main representative, under governmental trust gave the proper recognition to this architecture (Figure 2).

Figure 2: “Moorish Pavillion”, RJ, Brazil

The architectonic historical Manguinhos complex was built at the beginning of the twentieth century. Its founder, Oswaldo Cruz, contracted the architect Luiz de Moraes Junior to plan the Pavillion. Moraes was Portuguese born in Faro and accustomed to European fashions as the undergoing Neo-moorish style. The planning of the Pavillion began in 1904 and its construction in 1908, suffering alterations all the way along until its conclusion in 1918, due to discussions between architect and customer. According to the site of the Fiocruz [9] Institute, Oswaldo Cruz made a croquis resembling a medieval castle (Figure 3). Luiz de Moraes interpreted the scientist’s wish and in his initial designs foresaw only two stories besides an elevated basement for the Pavillion (Figure 4). In spite of the Neo-moorish inspiration, the adopted floor plan did not at all follow the same style precepts. Its composition did not include a closed inner courtyard as was the usual architectural trend in those days.

Figure 3: Croquis attributed to Oswaldo Cruz for the brasilian moorish pavillon project [9].

Figure 4: First croquis to Moirish Pavilion by Luiz Moraes (1904), source – Presentation [3]

According to [2] the Neo-moorish style of the Pavillion is mainly due to the influence Oswaldo Cruz suffered during the period he studied in Europe. In France he was influenced by the Montsouris observatory (Figure 5). Costa believes that after a visit to Germany in 1909, Oswaldo Cruz could have been influenced by the architecture of a Synagogue constructed in Berlin, whose distribution of façades and tower arrangements is similar to the Moorish Pavillion ones (Figura 6).

1 Portuguese city with great influences of the architecture Neo-moorish.

2 Oswaldo Cruz (1872-1917), brazilian scientist, sanitairist doctor, internationally recognized by his efforts in fight for the eradication of tropical diseases.
As described by [8], the Moorish Pavillion is a seven storey building with two towers with copper domes. The verandahs are covered with Portuguese tiles and French mosaics on the floors imitating oriental rugs. (Figure 7) The main entrance hall stairway has wooden and plaster panels worked upon in low relief, originally gilded. The library’s reading-room and the fifth floor hall have walls and ceilings in decorated plaster of Paris. In these environments the chandeliers made of bronze and tin with opaline domes produce a suave and diffuse luminosity that give the place an atmosphere of mystery (Figure 8). With exception of the areas planned for the laboratories, the external and internal walls of the building are covered by typical Islamic arabesques (Figure 9).

The Pavillion also has a lift, installed in 1909 by the Brazilian Electricity Company Siemens-Schuckertz Werke (Figure 10 and 11). According to the site of the Fiocruz Institute this lift is the oldest one in Rio working. It has two cabins for passengers and one for cargo. It was projected for four stops and has optional access from two sides. Constructed in iron, its passenger cabin is paneled in mahogany and has a ceiling and internal doors with bisotée mirrors. The drawing of the envolving guard rail was also done by the same architect and was constructed by the same firm that made the stairway banisters.
The Moorish Pavilion was filmed and photographed when visiting the place in loco in October 2007. From this digital documentation images of architectonic elements understood to be of Islamic origin were catalogued, part of which drawn in CAD. This cataloguing was performed focusing on two aspects: the architectonic elements and later the composite patterns.

3.1 Classification by architectonic elements
As a first approach the gathered documentation on the building was separated and from it extracted images that represented architectonic elements understood to be typically Moorish and sometimes completely Islamic, as the examples shown in Table 1.

Table 1: Classification by architectonic elements

<table>
<thead>
<tr>
<th>Walls</th>
<th>Floors</th>
<th>Other elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bricks and Granito</td>
<td>Portuguese Stones</td>
<td>Stained glass</td>
</tr>
<tr>
<td>Masonry</td>
<td>Ceramic tyles</td>
<td>Window in the ceiling craftmanship</td>
</tr>
<tr>
<td>Tyles</td>
<td>Wooden floor block</td>
<td></td>
</tr>
<tr>
<td>Glass floor block</td>
<td>Mosaic ceramic floor</td>
<td></td>
</tr>
<tr>
<td>Ironwork windows</td>
<td>Stairs in forged iron with floor in Carrara marble</td>
<td></td>
</tr>
<tr>
<td>Iron and wooden doors</td>
<td>Ironwork windows</td>
<td></td>
</tr>
<tr>
<td>Copper domes</td>
<td>German chandeliers, forged iron or golden bronze with light purple opaline accessories</td>
<td></td>
</tr>
</tbody>
</table>

3 glass window in the ceiling craftsmanship by Forment & Co (Rio). Until the twentieth century glassware in Brazil was made in a handicraft way (The history of glass, published on 9/25/2006 http://corderovirtual.com.br <last access in May 2008>
3.2 Classification of the composite patterns

Later on part of these images were cut out and reclassified to be reproduced in CAD (AutoCAD 2005) as the examples shown in Table 2.

Table 2: Classification by patterns, apud [1]

<table>
<thead>
<tr>
<th><strong>Friezes</strong></th>
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<tbody>
<tr>
<td>![Frieze Image 1]</td>
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<td>![Frieze Image 2]</td>
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<td>![Frieze Image 3]</td>
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<td>![Frieze Image 4]</td>
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<tr>
<th><strong>Wallpapers</strong></th>
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<tr>
<td>![Wallpaper Image 1]</td>
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<tr>
<td>![Wallpaper Image 2]</td>
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<tr>
<td>![Wallpaper Image 3]</td>
</tr>
<tr>
<td>![Wallpaper Image 4]</td>
</tr>
</tbody>
</table>

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4 Felipe Braz is a student of the 3th year of the course of civil engineering of the college of civil engineering, architecture and urbanism of the State University of Campinas FEC/ UNICAMP. His scientific initiation is tied to the FAPESP project, called: “The project process in architecture: from the theory to the technology”.

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presented by MONASTERIO, Clélia Maria C. T.
4. COMPARATIVE ANALYSIS

According to the architect Renato Rosa, the ornamentation clearly of Islamic inspiration used to cover entirely the structure of the Moorish Pavillion was based upon the La Alhambra palace in Granada, on going through [4] book “The Alhambra” bought by Oswaldo Cruz and given to his architect when putting up the building. This book is in the Pavillion’s library [2]. Nevertheless, [7] considers it to be nonsense as Islamic architecture is characterized by an intimate language approaching only the interior parts of the buildings.

At present, the research is stationed on the
comparative analysis between the composite designs found at La Alhambra and at the Moorish Pavillion. One can see right away the strong influence mentioned by [2] of La Alhambra on going through some of the images as the examples shown in Table 3. Besides, a process of virtual and physical models are under construction with the use of CAD/CAM (Figure 12).

Table 3: A comparative example between architectonic elements of La Alhambra and the Pavilhão Mourisco

<table>
<thead>
<tr>
<th>La Alhambra</th>
<th>Pavilhão Mourisco</th>
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With a very clear Islamic influence in many of its composite patterns and an evident influence of La Alhambra, the Moorish Pavillion of the Fiocruz Institute in Rio is indeed an interesting source for geometrical patterns studies.

Figure 12: Friezes and ironware 2D models of the Moorish Pavillion made with a laser cutter. Authorship – Felipe Braz, IC/FAPESP and Ana Lúcia N.C.Harris, 2008

The next steps in this research will focus on extracting nuclear units from discovered geometrical patterns and creating new composite forms in a bi and tridimensionally way by means of virtual and physical modeling.

ACKNOWLEDGMENTS
We would like to thank the gentility of the Architect and Researcher Renato da Gama-Rosa Costa for the interview about the “moorish pavilion” in October of 2007 and for his contribution for our research.

REFERENCES
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