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Review Article

Archaeobotany as a Tool to Verify the Visual Integrity of Historic Gardens

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Abstract

This article presents its methodological procedures in three axes of analysis: historical, bibliographical, and descriptive research used to arrive at a methodology for verifying the visual integrity-linked to the vegetation component-of Euclides da Cunha Square and Casa Forte Square. the landscape architect Roberto Burle Marx designed these two squares in the 1930s and nowadays the National Historic and Artistic Heritage Institute (Iphan) considers them Historic Gardens in the category of Cultural Heritage. Taking the historic garden as a living document made it possible to understand its evolution, especially the vegetation component. This action required the elaboration of the phytochronology and the construction of the vegetation palimpsest based on the archaeobotany of these two squares, which were configured as key elements for the understanding of the idea, design, and composition principles of Burle Marx, as well as for the verification of what remains today. It is in the permanence of the landscape architect's idea that visual integrity materializes and emphasizes the significance of this heritage.

Introduction

The vegetation is the essence of the historic garden and, therefore, conservation actions need to ensure integrity and authenticity considering the plant's life cycle and, consequently, periodic replacements of species. Although for artistic objects in general integrity is directly associated with the authenticity of the material, in the historic garden this relation does not happen in the same way because of its condition as an ephemeral work of art-perishable and renewable. The authenticity of a work of art is directed to the condition of genuine in opposition to being false or a simple copy, while integrity is linked to the meaning of continuity and honesty in opposition to fragmented and destroyed. The concept of integrity for a historic garden is still in its embryonic stage, therefore, the notion of the visual integrity of the cultural asset, proposed by Jukka Jokilehto, was adopted, linking it to the plant component under the lens of the aesthetic aspects represented in a given place. It is argued, consequently, that the visual integrity of the historic garden is independent of the authenticity of the plant species [matter] as long as the new species have plastic attributes compatible with those of the original project. This can include the action of restoration in which, according to Cesare Brandi, what is restored is the image and not the matter.

Archaeobotany, Phytochronology and Vegetation Palimpsest: The Path to Build The Instrument To Verify The Visual Integrity Of Historic Gardens

The garden, as a work of art, is constantly evolving and declining, so it would never be in a perfect state. The artistic principles attributed to the living element, the plant, are not in complete control because the medium also imposes itself with all its dynamics. The main difficulty in conserving the historic garden is linked to the management of the vegetation to guarantee the maintenance of the idea of who designed it - the image [dealt with here in the sense of composition]. Rosario Assunto [1] also highlights this difficulty, when he considers that when restoring a historic garden, the primordial factor is to rescue the idea of aesthetics - the recovery of Nature as a beauty to be seen. He also emphasizes the importance of botanical science for the image condition of the historic garden, which Carmen Añón Feliú [2] considers the key to the aesthetic emotion that the garden suggests and in which its very essence resides. Because of the conditions reported above, this study linked the conservation of the image of the historic garden to the notion of visual integrity insofar as it is associated with the plant component, based on the notes of Giovanni Carbonara [3], from the National Park Service [4], Cesare Brandi [5] and Jukka Jokilehto [6],

as they permeate the condition of the existence of the image for the understanding of integrity, whether in the garden or other types of works of art. The difficulty in verifying the visual integrity of the garden, directly related to the permanence or absence of the idea of who designed it, is due to the plant dynamics considered by Carmen Añón Feliú [7] as the fundamental element of the historic garden. Carbonara [3], dealing with the integrity of the historic garden, but specifically when he is referring to the vegetation component, highlights the importance of carrying out a detailed study of the historic and the existing vegetation [what we call phytochronology], culminating in the elaboration of the palimpsest discussed in depth by Desideria Pasoline dall'Onda [8].

To verify the visual integrity, the aspect of living document of the historical garden is assumed here, in corroboration with the writings of Desideria Pasoline dall'Onda [Italy] [8], Rosario Assunto [Italy] [1], Carmen Añón Feliú [Spain] [7], Giovanni Carbonara [Italy] [3], Sonia Berjman [Argentina] [9] and Maria Adriana Giusti [Italy] [10], who give us theoretical-methodological elements to understand the changes and vegetation stays in a historic garden. For the problem that we address in this work-the visual integrity of the historic garden, the observation was directed to the vegetation of Euclides da Cunha Square and Casa Forte Square, both projects by landscape architect Roberto Burle Marx for the city of Recife (Figure 1). The criteria for choosing these squares were based on the following conditions: they were the first modern gardens in Brazil; they are complete and executed works; they underwent restoration and entered the process of listing as cultural heritage of Brazil [at the time], consolidated in 2015, which allowed its inclusion in the Historic, in the Fine Arts and in the Archaeological, Ethnographic and Landscape Registry Book. Roberto Burle Marx was and still is the great exponent of the modern Brazilian garden. Sigfried Giedion in Le Brésil et l'architecture contemporaine, commenting on modernism in the gardens of Burle Marx, states that he was based on various criteria and, in addition to being strictly linked to his time, he did not neglect the past, that is, history of the place. Another characteristic that stands out is the use of autochthonous vegetation linked to a reflection on Brazilianness - strongly discussed in the Semana de Arte Moderna (Modern Art Week), in 1922. According to Mario Catalano and Franco Panzini [11], the reconstruction of the historical path through which the garden passed and the identification of plant species in different periods cannot be deduced as a simple analysis of what we see and understand but must have as reference a specific investigation.

Figure 1: Euclides da Cunha Square (left) and Casa Forte Square (right), 2015.

Carmen Añón Feliú [12], Margherita Azzi Visentini [13], and Sonia Berjman [9] emphasize the importance of in-depth knowledge of the historical garden through documents, historical and iconographic sources, bibliography, topographical reliefs and, if necessary, photo interpretation or archaeological inquiries. Unlike other works of art, in which the work itself constitutes the primary reference for the entire investigation, this does not happen in the historic garden. Because it configures itself as a living work of art, it led us to consider three axes of analysis: bibliographical, historical and descriptive research. The bibliographical research refers to secondary sources and covered literature that has already been made public about the subject of study. According to Trujillo [14], bibliographical research represents more than a mere repetition of what has already been said or written on the subject and, for our case, it covered the following themes: theory and history of gardens, theory of conservation and restoration of historic gardens and theory of architectural conservation and restoration. The historical research, according to Pontual et.al. [15], consists of discovering documents that will make it possible to form an image of the past and encompasses, according to Best [16], four aspects: investigation, registration, analysis, and interpretation of facts that occurred in the past. Therefore, the indirect document technique was used, in which data collection is restricted to written or unwritten documents, constituting what is called primary sources, and, for this purpose, the following literary documents and visual: reports by heads of government, Burle Marx and Joaquim Cardozo in period newspapers, magazines, albums, annual and monthly catalogs, and iconographies [photos, postcards, engravings, and floor plans]. The information provided from the analysis of these documents was fundamental to understanding the history of Euclides da Cunha Square and Casa Forte Square, as well as the design intentions of Burle Marx. For the survey of primary and secondary sources, the collections of public and private archives, national and international, were consulted, most of them specialized in garden history and the history and preservation of historic gardens (Table 1).

Table 1: Main collections consulted between 2012 and 2015 to survey primary and secondary sources.

Collection	Institutional Archives	Country
Technische Universität Berlin Universitätsbibliothek	Garden treatises [19th century]	Germany*
Enzyklothek historische Nachschlagewerke	Garden treatises [16th century]	Germany*
Bibliothèque René Pechère	Minutes of the meetings of the International Conference of Landscape Architects and the International Federation of Landscape Architects	Belgium*
Fundação Biblioteca Nacional	Period newspapers [1931 - 1980] and iconographies	Brazil
Fundação Joaquim Nabuco (Fundaj)	Iconographs of Burle Marx's Gardens [1936-1950]	Brazil
Instituto do Patrimônio Histórico e Artístico Nacional (Iphan)	Advisory Council minutes for the protection of gardens as well as iconographies	Brazil
Museu da Cidade do Recife	Iconographs of Burle Marx's Gardens [1936-1950]	Brazil
Arquivo Público Estadual Jordão Emerenciano (Apeje)	Period newspapers [1931 - 1937] e iconographies [1937-1950]	Brazil
Sítio Roberto Burle Marx	Iconographs of Burle Marx's Gardens [1935-1937]	Brazil
Laboratório da Paisagem da Universidade Federal de Pernambuco	Restoration project for Casa Forte Square and Euclides da Cunha Square	Brazil
Biblioteca Digital de Castilla y León	Garden treatises [19th century]	Spain*
Biblioteca Digital da Sociedad Española de Historia de la Construcción	Architectural treatises focusing on gardens [15th and 16th centuries]	Spain*
Biblioteca de la Universidad de Córdoba	Garden treatises [16th century]	Spain*
Internet Archive	Garden treatises [17th, 19th and 20th century]; gardening manuals [19th century]; English domestic architecture treatise focusing on the garden [20th century]	United States of America*
HathiTrust's digital library	Garden treatises [19th century]	United States of America*
International Council on Monuments and Sites (Icomos)	Books of meetings of the International Committee on Historic Gardens – Icomos/Ifla; Heritage documents	France*
Bibliothèque Nationale de France	Garden treatises [17th 18th; 19th and e th20 centuries]; gardening manuals [19th century]	France*
Collections numérisées de la bibliothèque del Institut national d'histoire de l'art	Garden treatises [19th century]	France*
Système Universitaire de Documentation	Garden treatises [17th century]	France*
United Nations Educational Scientific and Cultural Organization	Heritage documents; Meeting books	France*
International Centre for the Study of the Preservation and Restoration of Cultural Property (Iccrom)	Documents and books on heritage conservation and restoration.	Italy *
Biblioteca de la Universidad Autónoma Metropolitana	Books specializing in garden conservation and restoration	Mexico

*Collections consulted online.

In an attempt to verify the visual integrity, it was necessary to understand the design intentions of Burle Marx in the implemented project, the restoration of Euclides da Cunha Square and Casa Forte Square, and the current situation of these two squares, which allowed us to create the phytochronology and, consequently, the vegetation palimpsest, characterized as historical and descriptive research. Phytochronology is considered by Frederico Maniero [17] as an important working tool for planning and managing green areas, with special relevance for the conservation of historic gardens. It has the characteristic of being an extremely important instrument for furthering the botanical knowledge of a given garden, being essential for conservation actions and, consequently, for ensuring the permanence of visual integrity. The vegetation palimpsest, on the other hand, reveals the idea of who conceived the garden and how it has changed over time. This understanding gives us elements to justify, for example, which historical period must be respected in the restoration process. Thus, the vegetation palimpsest is the basis for understanding visual integrity as it makes it possible to capture the image of the garden [8,18,19].

For the elaboration of the phytochronology and the vegetation palimpsest of Euclides da Cunha Square and Casa Forte Square, three historical moments were considered. The first, from 1935 to 1950 [creation and evolution of the garden], made possible the knowledge of the historical vegetation palette. For this purpose,

reports by Burle Marx, Joaquim Cardozo, and heads of government were analyzed, as well as the photo interpretation technique (Figures 2 & 3) was used in 41 iconographies (Figures 4 & 5). The second comprised two periods: the first one from 2003 and 2004, for Euclides da Cunha Square and the second from 2011 to 2014, for Casa Forte Square, occasions in which the restoration process was taking place and the vegetation was extensively studied and modified. For this purpose, the following documents were consulted: the technical report Restoring the Recife of Burle Marx: Faria Neves Square, Derby Square, and Euclides da Cunha Square from 2003 and the Inventory of Burle Marx Gardens in Recife (first phase), from 2011. The third moment included the floristic inventory carried out in 2015. Interpreting iconographic material is quite complex and requires detailed investigation by botanists specializing in historical vegetation or by historians specializing in botany [1-20]. Photography is also one of the most practical and immediate ways to convey information about the garden, including the landscape in which it is inserted [21]. As can be seen in Figures 2 & 3, with the photo interpretation of the iconographies used to inventory the species, it was also possible to understand the compositional arrangement employed by Burle Marx, as well as the phytoassociation-considered essential by the landscape architect when designing their gardens, information this one, extremely important and unprecedented, as it did not have the floor plan of the original project for Euclides da Cunha Square and the indication of the planting location of most arboreal and herbaceous individuals on the ground floor of the original project for Casa Forte Square.

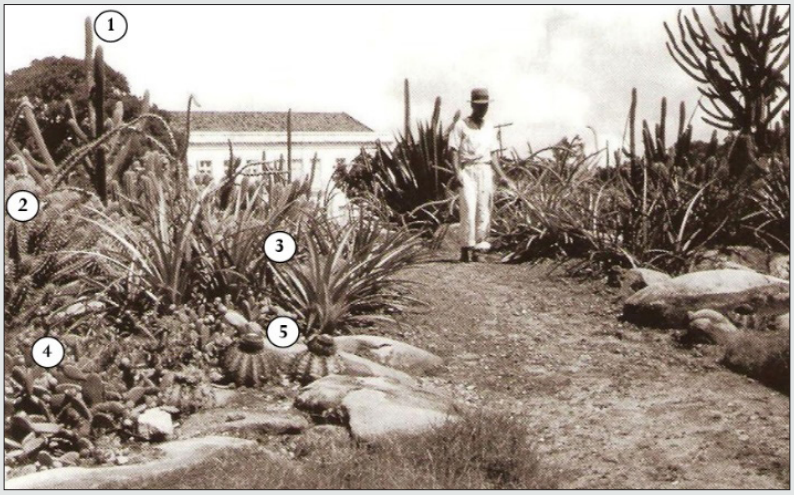

Figure 2: Photo interpretation example. Euclides da Cunha Square, 1940s. Collection: Gilda Pina (in Dourado, 2000, p. 43). Where: 1 = Pilosocereus piauhyensis; 2 = Pilosocereus gounlei; 3 = Bromelia laciniosa, 4 = Opuntia palmadora and 5 = Melocactus bahiensis.

Figure 3: Photo interpretation example. Garden of exotic plants at Casa Forte Square, the 1940s. Collection: Joaquim Nabuco Foundation. Where: 1 = Felicio decipiens; 2 = Lagerstroemia indica; 3 = Alpinia sp. and 4 = Nelumbo nucifera.

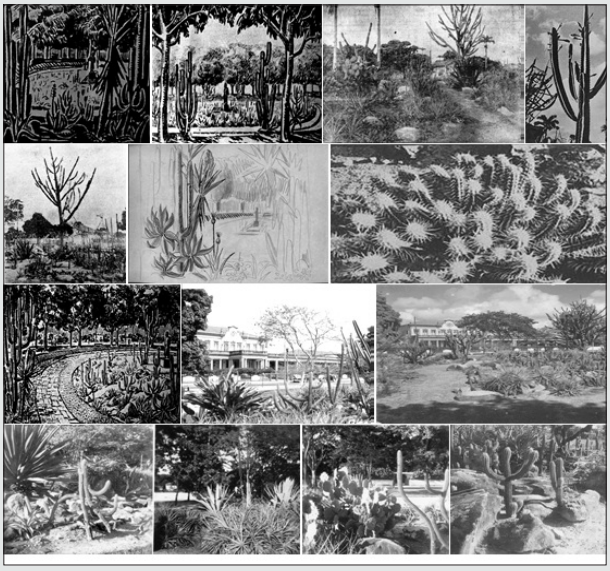

Figure 4: Euclides da Cunha Square iconographs used for photo interpretation. Collections: Joaquim Nabuco Foundation, Recife City Museum, Sitio Roberto Burle Marx, and National Library Foundation.

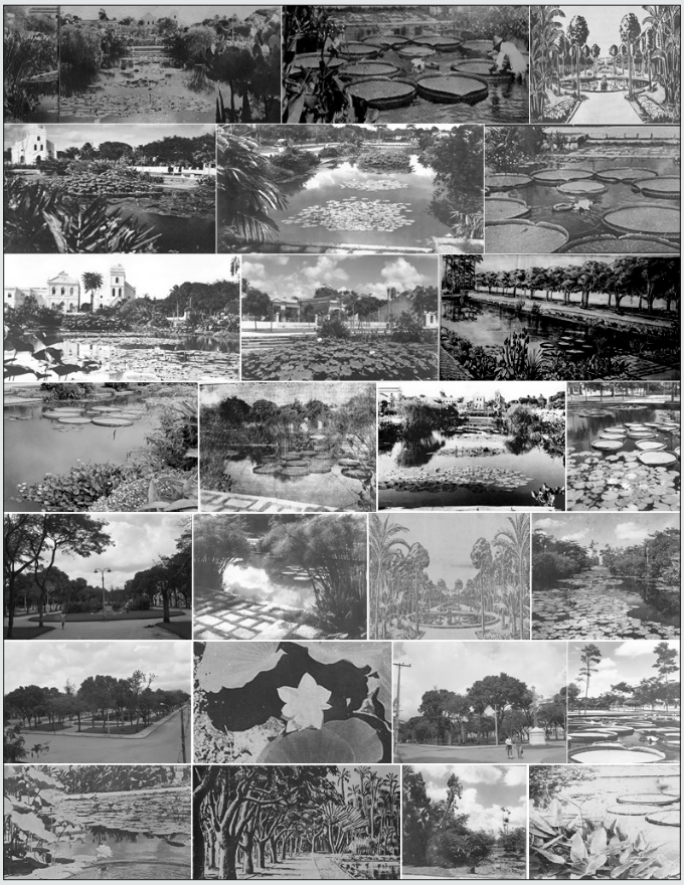

Figure 5: Iconographs of Casa Forte Square used for photo interpretation. Collections: Joaquim Nabuco Foundation, Recife City Museum, Sitio Roberto Burle Marx, and National Library Foundation.

Concerning the descriptive research, direct documentation was used as a technique, which refers to the collection of data in the place itself-the study area. This data can be obtained in two ways: in the field or the laboratory. Thus, to carry out the floristic inventory of Euclides da Cunha Square and Casa Forte Square, as well as identify the scenic points of view for these two squares, a field study was carried out, which according to Tripodi et al., [22] "it is divided into three large groups: quantitative-descriptive, exploratory and experimental". Once again, referring to the objective, only the first group was considered, as it makes it possible, according to Triviños [23], to describe the facts and phenomena of a given reality. The floristic inventory was carried out in 2015 through a census, that is, all individuals existing in the area were inventoried, using the following protocol: location and identification, listing the date of the survey, the quantity of general individual and by species, the name scientific and popular, the botanical family and the phytogeographic domain. Understanding the phytogeographic domain of the species that make up the squares, especially at present-in 2015, was extremely important since Burle Marx used this condition as a design principle in his composition. The taxonomic identification of the specimens was carried out in loco only for the case of very well-known species. For the others, samples of fertile botanical material were collected and later identified by specialists and compared with exsiccates from the virtual herbarium Reflora, the Neotropical Herbarium Specimens, the Neotropical Live Plant Photos, and Tropicos®. To characterize the vegetation, a floristic list was drawn up according to the Angiosperm Phylogeny Group III (APG III) classification system relating to families and species. Confirmation of names and phytogeographic distribution was obtained by consulting the species index on the Missouri Botanical Garden website and the Reflora Platform.

Euclides da Cunha Square and Casa Forte Square were designed with the aim of modernizing the city of Recife and are landmarks in the neighborhoods of Madalena and Casa Forte, respectively. Thus, these squares became meta-landscapes, which for Rosario Assunto [1]) are representations in space and time delimited by the ideals and aspirations of man. In this way, the visual integrity goes beyond the interior of the garden and runs through the space where it is inserted and, thus, becomes noticeable. With the intent of guaranteeing this perception and taking into account the urban transformations which the City of Recife has been going through, the identification of strategic points of scenic views of Euclides da Cunha Square and Casa Forte Square was carried out, and for this purpose, the main access routes to the squares were chosen. Therefore, we started from Gordon Cullen's concept of serial vision [24] - in the field of optics - with the difference that not several photographic takes were taken, but one in each way. Walking in the square-lane direction, the survey was carried out from the moment the square was still visible and perceptible, that is, the square was not confused with road afforestation (Figures 6 & 7). The study discarded the landscape visual points close to the squares in the certainty that these are already consolidated. From this perspective, it is understood that visual integrity needs a physical medium [matter] to remain in the garden, in this case, the vegetation, and consequently convey the idea of who designed it. Thus, according to Brandi [5], the matter is shown as that which serves the epiphany of the image, that is, the sudden sensation of understanding or understanding the essence of something.

Figure 6: Visibility angles for Euclides da Cunha Square, highlighted in green on the square. Where: p1 and p3: Rua Benfica; p2: Rua Professor Benedito Monteiro; p4: Rua Heitor Maia Filho. Edited by Joelmir Marques da Silva, Eduarda Dantas and Wilson de Barros.

Figure 7: Visibility angles for the Casa Forte Square, highlighted in green on the square. Where: p1: Rua Oliveira Góes, p2: Rua Marquês de Paranaguá; p3: Avenida 17 de agosto; p4: Rua Visconde de Ouro Preto; p5: Rua Jerônimo de Albuquerque and p6: Rua Doná Anunciada de Morais. Edition: Joelmir Marques da Silva, Eduarda Dantas and Wilson de Barros.

Considerations

The application of this instrument allowed us to realize that Casa Forte Square and Euclides da Cunha Square have the power of artistic evocation that is not present in other types of gardens. They are distinct gardens, with personalities, full of meanings, and that makes it possible to integrate man into his past and his history in a simple, natural and effective way at the same time. However, we are far from a solid definition of what is the visual integrity of a historic garden, as well as a standard methodology for its verification and/or recovery, even because each case is different. The starting point was given with the elaboration of this instrument presented here, now it is necessary to keep going because nothing is finished and there is no absolute truth. Everything is passive to questioning and it is in the act of questioning and not accepting everything we see as true that we do science. From this instrument for verifying the visual integrity, it can be considered that in the historic garden such integrity is the one that allows the specialist to perceive and feel an aesthetic emotion favored by the presence of the idea of who conceived it, that will guarantee the authenticity of the cultural asset, confirming the thesis that the visual integrity of the historic garden does not depend on the authenticity of the plant species [matter] as long as the new species have a plastic approximation with those of the original project.

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