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1 Introduction

Faced with the intervening activity in built heritage, numerous challenges arise in the day to day of those who are concerned with the memory preservation for future generations. In the Architecture and Urbanism field, the training of professionals who will work in this special mission, such as architectural restoration, urban rehabilitation or requalification, requires a knowledge sum to deal with the most diverse challenges (Fig. 1). It is only possible with interdisciplinary contribution in the Architect and Urbanist training, who have professional attribution to intervene in built heritage.



Fig. 1: An example of challenges that restoration architects find in cultural buildings. Case of the fire followed by Casa Carvalhaes collapse, in Belém historical center, that co LACORE voluntary action to collect integrated cultural assets from the rubble. Commerce Center, Belém. Source: Thais Sanjad, 2015.

Currently in Brazil, the specific knowledge demand in restoration requires training at a postgraduate level for Architects and Urbanists. It is in postgraduate studies, either stricto or lato sensu, that these professionals acquire necessary knowledge to be restorers architects, or to act consistently in specific and diverse approaches of an urban historical site. Because the contents for

the Cultural Heritage Built safeguarding, offered in undergraduate courses, attend to a general education even if a basic content is offered in some courses.

In Brazil, this discussion already has some long paths taken by researchers who have preceded us and today inspire us to follow their footsteps in a context that includes cultural plurality in the Amazon Region immensity. Peculiarities of this context built buildings and established urban occupation sites from knowledge exchange among local culture, of those who already lived there, the Europeans (mainly Portuguese) and the Africans. All of them would join in a unique cultural heritage construction, fruit of this cultures miscegenation, and what needs to be better understood to be preserved.

The scientific research contribution assumes, thus, a primordial role in sense of increasing knowledge about the Amazon Cultural Heritage. In architectural restoration field, the first initiatives date back to the 1980s and 1990s, either through restoration specialists participation in cultural buildings works, or the *lato sensu* formation beginning in the region during 1995 - 1996, making possible the first Architects and Urbanists group. The *stricto sensu* formation, however, began, in Amazon, only in 2010, with the Post-Graduate Program creation in Architecture and Urbanism of the Pará Federal University. It started as initially line denominated "Heritage, Restoration and Technology". She relates to knowledge about restorative theory and praxis, based on the conservation science and restoration, focused on local reality.

This work object is to address scientific contributions that have been developed in postgraduate context, from this contribution to the first restoration architects in *stricto sensu* level, in region itself, and as this is reflected in the Amazon Built Heritage safeguard.

2 Considerations about the Amazonian built heritage: between the knowledge of land and those beyond sea

Architectural heritage in the Amazon region presents a great typologies diversity, constructive systems and materials, reflecting cultural influences that helped in Northern region formation, whether European, African and other foreigners, or indigenous. The latter's knowledge of local flora and fauna influenced the "imported praxis" regionalization, mainly due to the need to adapt some techniques to materials that the region offered. One of the initial researches in this increasing knowledge process about the Amazonian cultural heritage, it had tiles as study object, more present in greater regional importance cities, but found also, in a dispersed way, in places and some interior cities. Regionalization examples regarding tile can be seen in used Portuguese materials constructions from the 17th, 18th and 19th centuries. That is, a Portuguese tradition adaptation, such as buildings with tiles coating habit, as it appears in the expedition report by Negro River, commanded by the naturalist Alexandre Rodrigues Ferreira (1756 -1815):

Unless this is the reason for being covered with straw, it seems to me, that much more secure, durable and even aerated it was being covered with tile; not to be disguised under any pretext, to be working in Thomar Village adjacent manufacture in pots and tiles for private individuals service, and not for a main church cover. It is painted inside in a tile shape, with no more expensive paint than curí and tauá, indigo and tabatinga (reddish clay color, white clay color, indigo, yellowish clay color, respectively. Translator's note) (Ferreira, 1983, p. 91, our translation).

In this cultures miscegenation process, religious orders role was fundamental to carry out the Indians catechizing mission, since they were available labor force to construct and decorate buildings. The catechetical program included professional workshops, where experiences exchanges between religious and Indians took place. These passed on knowledge about local raw material, mainly about earth paints, which they used to paint the body and utensils. The local paints were objects from two researches that reproduced historical recipes and identified our region peculiarities, from local raw material use. Information concerning fauna and flora use by the Indians is documented in the Jesuit João Felipe Bettendorff (1627 - 1698) chronicles and the Father João Daniel (1722 - 1776) treatise. In these important documents are described materials and techniques that were unknown in the Old World.

... a white clay which natives call as tabatinga, which is put for soaking and passed through a cloth, and then well-cooked serves as first paint to statues and to painters, instead of Kingdom plaster; but this tabatinga, from which banks are full, is not a being heeded matter, and is used only to whitewash (Bettendorff, 1990. p. 28, our translation).

Many materials were from the region, or even locally produced, with knowledge acquired with settlers. Building lime and ceramics, in general, were produced in places already authorized by the kingdom. Wood, straw, clay, sand and stone were extracted from the region itself. In Belém, capital of Pará State, there are records in maps and reports that quote Largo da Sé as place where lime kilns were built (Cruz, 1976). Lime was produced from shells calcination found along the coast and also in sambaquis (An archeological site with shell deposit. Translator's note).

In the 18th century, in 1753, the architect Antônio Landi, from the Clementine Academy of Bologna, arrives in Belém, whose significant performance in the city was responsible for an important architectural legacy in this period. Landi also records the Amazonian flora resources, travels through cities and the Amazon rivers, and learns from the Indians how to make ink, such as Carajiru (Arrabidaea Chica) ink, and leaves recorded how to extract from this ink (Papavero, 2002).

Until the 18th century end, Amazonian cities are described as places whose constructions use mainly materials that the earth could offer, with whitewashed buildings or with earthy tones by tabatinga use. Reports from travelers suggest that Belém had few residences with more than two floors, most of which simple, single-floor and with muxarabi wooden latticed windows (Spix, 1938, Bates, 1944 and Kidder, 1972).

It is from the 19th century middle that the Amazonian cities appearance begins to change itself due to Rubber Economy. Glass, a material rarely present in local buildings in the 17th and 18th centuries, was applied punctually in more important buildings, but in the 19th century second half this material began to be applied in buildings window frames (Cruz, 1976). In 19th century end, glazing windows practice was reinforced by Antônio Lemos's Postures Code, the Belém mayor during rubber period, since material grants better hygienic conditions to buildings (Belém, 1891). Another research object developed in Postgraduate scope, glass used in Belém buildings were imported, that is, no local contribution to the own material production, but researches are in understanding processes of to change it, considering climate actions.

At the most prosperous region economic period, the European materials use has been intensified in buildings and the Amazonian cities, mainly Belém and Manaus, rubber Capitals, acquired European cities features. Belém is compared with the Oporto Portuguese city, by Santos Simões (1965), to due to façades number with Portuguese tiles. The Art Nouveau style also invades city

through materials and iron architecture, making Belém the Brazil capital with the richest industrialization heritage, becoming it also known as Paris in America (Silva, 1987).

These mix multicultural knowledge examples, present in our buildings, are a small possible testimonies demonstration that monuments hold and they are fundamental to understand how our cultural identity was formed. These human doing testimonies are inserted in Riegl concept (2006), when he approximates both monument idea and people, once it corresponds to everything that they remember. From this viewpoint, the Amazonian cultural heritage witnesses the Brazilian Northern territory occupation history and linkages that took place between settlers and colonized, between the New World and the Old Continent. They keep configurations and different times strata that deserve to be analyzed and respected, earning, therefore, special attention, as Kühl (2008, p. 80, our translation) explains:

Thus, light is thrown into various cultural assets aspects, with awareness that all things regarding to men and their history can be considered scientific analysis objects and careful preservation worthy.

3 Restoration as a disciplinary field in the Amazon and academic research role

Restoration as a disciplinary field begins in Belém, and this is, probably, the outset of the continuous action throughout Amazonia in the late 1980s and early 1990s. Rather than this, interventions in historical monuments used current constructive techniques, often eliminating/replacing historical materials. And, in the new architecture design to be inserted in the oldest city nucleus, or in annexes construction, if the project did not promote a featureless, it corresponded to false historical and/or artistic, because, as explained by Dourado (2003, p. 9, our translation), is "false history, because it leads to deceit, making it seem old what it is not; false artistic, because, as an expression, it does not correspond to language of its time".

The restoration culture, therefore, takes time to reach the Brazil Northern region, while other places in the world, or even Brazil, have a vast path travelled and, in the 20th century, it was already seen as a disciplinary field. One of the first actions to spread knowledge about Cultural Heritage preservation in Belém concerns the Prof. Jorge Derenji (FAU / UFPA) invitation to Prof. Mário Mendonça de Oliveira (FAU / UFBA) to participate at Extension Course in Cultural Assets Preservation. It was in 1987, from August 31 to September 25, providing two modules: 1) Reading and monuments documentation and 2) Conservation and Restoration Technology, during September 15 and 16 of 1987. In 1993, the same professor returned to Belém, then as a Brazilian Institute of Cultural Heritage consultant (IBPC, current IPHAN), in the Antônio Lemos Palace restoration works context, through the Belém Municipality Cultural Foundation. In this occasion, he provided a workshop about Restoration Theory and Technique and Historic Monuments, whose focus was various public agencies technicians' qualification, acting directly or indirectly in built and urban heritage. Two years later, the first specialization course in Restoration at UFPA was held in partnership with UFBA.

Nowadays, it is possible to consider that interventions in Belém and other Amazonian localities belong to two major groups: 1) One in which professionals involved have some knowledge about architectural restoration, among which are inserted the first actions graduates, who sought to broaden their knowledge in restoration area as a disciplinary field; 2) Another, in which there is no restoration knowledge, among engineers, architects and auxiliaries, who intervenes in building treating it as a common work.

Historical strata as materials developed with region technology, nonexistent in any other part of the world, were and continue to be subtracted from buildings, indiscriminately. In this second case, cultural assets works are understood as common works. There is no monument importance understanding, of what it holds in its materiality, nor even theoretical-critical reflection on it:

(...) The understanding lack of cultural assets also as historical documents leads to real discretion and irreparable damage, because it must be repeated to the exhaustion that time is not reversible and that it is always faced with unique and non-reproducible testimonies that should be scrupulously preserved (Kühl, 2008, p 114, ou translation).

To intervene, it is essential to be aware that restoration is a disciplinary field that involves Humanities, sciences and technology knowledge. Kühl (2008) makes an important reflection on intervention criteria in Brazil. He raises a particularity from Brazilian case and preservation agency performance itself, which concerns the specific technical knowledge lack, in its early days, to deal with preservation:

[...] with the substitute materials use and contemporary constructive techniques, the reinforced concrete use extensively applied in consolidations and to reinstate. However, these materials used in completions were impossible to distinguish with naked eye [...]. SPHAN used the 'masked' reinforced concrete for both structural reinforcements and completions that led asset to an idealized complete state [...]. It transcends a blind faith in reinforced concrete, material that presents itself as ideal, ready to be used in several situations, either in the new buildings construction, in a building made with any material consolidation or in historic buildings completion, even rammed earthen ones. There does not seem to be any questioning about possible compatibility problems (Kühl, 2008, p. 107, our translation).

It is important to remember that, in order to preserve an asset that has a great cultural wealth, such as the Amazon buildings, it is necessary to be aware that they cannot be subject to fashions and tastes of the time.

Keeping the memory of human architectural production becomes, in turn a more engaging activity from scientific viewpoint, because we are dealing with irreplaceable, unrepeatable examples on which conceptual or technical errors leave us no room for excuse [...] (Oliveira, 2011. p. 13, our translation).

As the precursor masters disciples, we value our approach to other knowledge areas. We learn from Mário Mendonça to make restoration task a careful work, under scientific investigation, whose responsibility in face of so many challenges leads us to dialogue with professionals, not just in Humanities, but also in technological areas, in search of the most appropriate solutions for each case. This approximation between Heritage and Science reflects Oliveira's thought (2011, p. 14, our translation), when he tell us that:

Understanding the composition of these materials and how they deteriorate is fundamental for conservation development and restoration techniques adapted to the Amazonian reality, whether due to materials availability that the region offers or to

If science and scientists contribution is fundamental to conservation, this complex activity operators must have an intimacy minimum with the prior to have a dialogue minimum a condition with scientific community.

restoration materials compatibility with old materials, and, mainly, aiming technical procedures durability adopted (Fig. 2).



Fig. 2: Mixed masonry of stone and brick at Church of Santo Alexandre, in Belém, which presents salts crystallization problems in a level that compromises the conservation of (A) and sanitation mortar application for salt removal, as a result of the student Alexandre Maximo Loureiro master dissertation research, guided by Prof. Rômulo Angelica. C Santo Alexandre, Belém. Source: Thais Sanjad, 2011.

Knowledge of these materials and changes characterization in local climatic conditions provide subsidies to constitute the scientific bases that meet a regional demand in the Brazilian cultural heritage safeguard. It means that not only replicates successful experiences in other conditions and country realities, but which are consistent with the Amazonian social, cultural and environmental reality (Fig. 3).



Fig. 3: Ultrasound analysis of the tomb granite column in Soledade during Pâmela Anne Bahia master dissertation field research, guided by Prof. Thais Sanjad, with research Del Lama (University of São Paulo) and José Delgado Rodrigues (National Laboratory of Civil Engineering / Lisbon), which guided these data collection. Cemetery Nossa Sen Soledade, Belém. Source: Thais Sanjad, 2013.

Research on conservation and built heritage restoration, developed in the Postgraduate Program in Architecture and Urbanism (PGAU / UFPA), recognizes the need to investigate, on the one hand, relationship between people and monuments, theoretical-critical reflection about what and why preserve. On the other hand, the Amazonian specificities, materials available in the region and their behavior in weather face and anthropic actions. Its mainly goal is to make conservation and restoration practice accessible to local reality, thus, meeting the Declaration of Curitiba recommendations (2009. p. 2, our translation) in understanding conservation and restoration "as a careful methodological theoretical process, based on research and instruction, without considering traditional techniques, the knowledge of the good masters and craftsmen".

4 Conclusões

The research increase on cultural heritage built in the Amazon has been consolidated, especially, regarding building materials and their behavior in face of prevailing tropical weather and its changes, whether these coverings, tiles, bricks, mortars, stuccos, rocks, metals, mosaics, marmorites, paintings, glasses, woods, among others.

However, long paths still have to be taken to create a monuments conservation and restoration culture here constituted, understanding its multiple dimensions and knowledge, being under architectural viewpoint, or urbanistic. Recognizing, beyond this, urban and rural historical sites dispersed in this vast territory, and observing its social, economic, cultural and historical specificities.

Academic research, its results and innovations, has a fundamental role in this process and contributes to valorization and professionals training capable of recognizing the several Amazonian identity aspects beyond knowledge diffusion and testimonies preservation. It also adds a strong indigenous presence to this heritage construction, which combines knowledge that only they had about the region, so commonly described from the European presence.

The importance recognition of these contributions and their correlations and multicultural interfaces, still in the present day, is a primordial step in collective memory safeguarding. It was so well explained by Benedito Nunes:

We are, as a people, endowed with an own culture that has its distinctive physiognomy, its peculiar ethos, where Portuguese extraction components merge with those primitive, indigenous and black characters [...] (Nunes, 1997, p. 536, our translation).

Our distinctive physiognomy is imprinted in traces, reports, drawings, revealed materials and immaterial in architectural and urban Amazon heritage and other collections that constitute this cultural assets wide range. Let us know how to recognize them in a timely manner to preserve them in their multiple dimensions, acting with professional responsibility and citizenship.

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