

GUANABARA'S BAY FORTIFICATIONS: MEMORY AS ENVIRONMENTAL EDUCATION FOR MILITARY PERSONNEL

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ABSTRACT

In its five centuries of history, the process of building Brazil as a nation has left an expressive patrimony where dozens of fortifications are found throughout the Brazilian territory, particularly. Aiming at preserving these architectural ensembles, legal instruments have been multiplying from the organs of public power that are pointing directly towards the preservation of historical-cultural and environmental patrimony. Goal. Using memory as an exercise to build an environmental knowledge (environmental education) by military students who served in the Fort of Leme. Methodology. Effective semi-structured interviews were to lift the process of creating the APA-LEME and revitalizing the degraded surrounding biota, being precursors to the list of more secondary documents that proved to be valuable sources of factual clarification. Results. The experience of didactic use related to Leme's memory, rescued from the interviews and experiences of the interviewed people, allows a better evaluation of military attitudes of conservation and cataloging of effective military participation in environmental operations. The valorization of the fortress system, an important cultural heritage, corroborates actions aimed at tourism activities, preservation of memory, environmental education and environmentally conscious interventions.

KEYWORDS

Environmental education; Fort Leme; Guanabara bay fortifications;
historical and cultural heritage; preservation

FORTIFICAÇÕES DA BAÍA DA GUANABARA: MEMÓRIA COMO EDUCAÇÃO AMBIENTAL PARA MILITARES

RESUMO

O processo de construção do Brasil como nação deixou, em seus cinco séculos de história, um expressivo patrimônio, onde se destacam, particularmente, dezenas de fortificações espalhadas por todo o território brasileiro. Visando a preservar esses conjuntos arquitetônicos, vêm se multiplicando instrumentos legais dos órgãos do poder público voltados diretamente para a preservação do patrimônio histórico-cultural e ambiental. Objetivo. Usar a memória como exercício de construção de conhecimentos ambientais (educação ambiental) por parte de alunos militares que serviam no Forte do Leme. Metodologia. Entrevistas semi-estruturadas eficazes para levantar o processo da criação da APA-LEME e da revitalização da biota circundante degradada, sendo precursoras do elenco de mais documentos secundários que se revelaram fontes valiosas de esclarecimento de fatos. Resultados. A experiência de uso didático relacionado à memória do Leme, resgatada pelos depoimentos e experiências dos sujeitos entrevistados, permite um melhor conjunto avaliativo de atitudes militares de conservação e de catalogação da efetiva participação militar em operações do meio ambiente. A valorização do sistema de fortalezas, importante herança cultural, corrobora para ações voltadas para atividades turísticas, de preservação da memória, de educação ambiental e de intervenções ambientalmente conscientes.

PALAVRAS-CHAVE

Educação ambiental; Forte do Leme; fortificações da baía da Guanabara;
patrimônio histórico e cultural; preservação ambiental

INTRODUCTION

In its five centuries of history, the process of building Brazil as a nation has left an expressive patrimony where dozens of fortifications are found throughout the Brazilian territory, which reminds therefore that recognizing regions, demarcating and defending borders, building cities or simply ensuring their existence was not an easy task, much less anonymous or random. Although we often do not know how to identify its authors or recognize such an effort, this exercise rests on knowledge of the specificities of a new land that would not only be able to draw the profile of hundreds of cities, but also the country itself.

Whole chapters of this history need to be written. The presence of this constructive, planning and defensive action is necessary when observed, and it can be said that the Guanabara's Bay soon began to keep this memory in its monuments and its geography.

But the process of growth and the organization of municipalities compromised the vision of urban and regional planning also the cycles of monuments constructions, which mark the landscape of the cities, fortifications in this case. Added to more structural issues, somehow, it ended up allowing unequal and unbalanced forms of occupation in large stretches of the Bay compromising even around the environment. In this sense, the proximal and next to the fortifications also began to be perceived as huge reserves of green areas and, in this sense, the fortifications and their surroundings gained over the last years a great importance, even from the perspective of the patrimony.

The objective of this work was to bring the memory as an exercise in the construction of environmental knowledge by military students who served in *Forte do Leme*, raising the conditions for the creation of the Environmental Protection Area of the district of Leme (APA-Leme in 1990), in Rio de Janeiro city.

The article consists of three sections. In the first, the concepts of memory as construction and reconstruction of identity are presented coming from the culture. The second is methodological, highlighting the use of oral history as an instrument of environmental awareness. In the third section, categories are given that give life to the reconstitution of memory: historicity, space and botany, where the historical evidence and the local nature in its context give substance to the interviewees' testimonies.

It turns out that the valorization of the fortress system as an important cultural heritage corroborates to actions aimed at tourism activities, memory's preservation, environmental education and environmentally conscious interventions.

THE MEMORY AS IDENTITY CONSTRUCTION AND RECONSTRUCTION

Whatever its age and despite the roughness of its lines Fortification has an expressive plastic beauty as its work of military architecture. In the past most of them was

conceived by great architects and artists such as Dürer, Miguel Ângelo, Francisco de Giogio Martini or military engineers who know the term classic, although in an economical way, in most cases, entrance and portals of defense works. The beauty of the fortifications does not lie in its decorative repertoire, but in the simplicity and purity of its lines where, as a general rule, no concession was made to the superfluous. The drawing was a slave of the function and therefore of a very great sincerity (Figure 1).

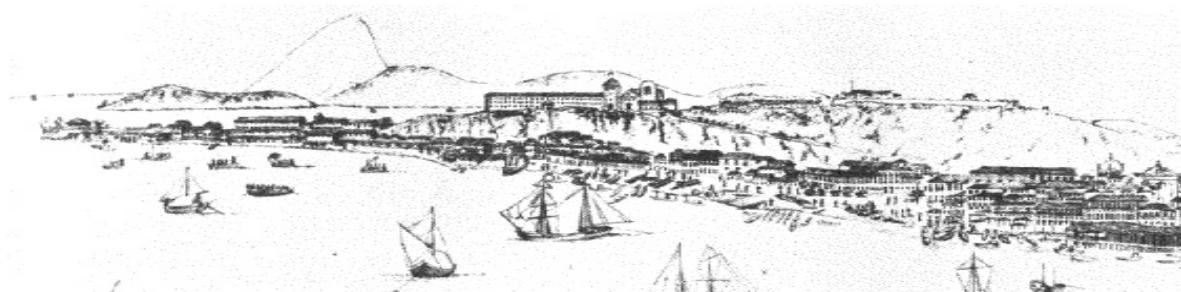


Figure 1: Cove and Port of Rio de Janeiro

Source: IPHAN, Brazil

The fortifications progress has survived poorly understood far from the stylistic repertoire, whose taste may change over time, soulless trade or uneducated managers, considered to be favorite postcards because the reference of the city's image.

The history of Rio de Janeiro's city in its origins is confused with the History of Brazil, materialized and perpetuated through its monuments, forts and buildings restored and preserved. During the colonial period, several Brazilian cities, including Rio de Janeiro and present-day Niteroi, accumulate traces of a constant project and expansion of defensive structures aiming at protecting the cities. In the case of Rio de Janeiro, the singularity of this military architecture begins precisely in its dynamic character, an architecture that is permanently placed in evaluation and adjusted to allow it, for instance, to keep the city unbeaten for almost one hundred and fifty years until the looting of Duguay-Trouin (1711) (Santos Júnior, 2010).

However, what also draws attention when one observes the fortifications of Guanabara Bay during this period is its character of a true defensive-articulated / open system, a solution of great complexity, considering that Brazilian cities were never endowed with closed walls, unlike European examples.

This local peculiarity would require a careful attention to the location, at different historical moments, function and range of each fort so that each one worked in an integrated way to the defensive set despite its role and specificity.

Although, until the first decades of the 20th century, this "integrated" logic was in the extensions of some of the Bay's fortifications, the administrative actions developed after Independence and, above all, with the Republic, would succeed in successive fractures in articulation and oneness of this group of buildings, by promoting a gradual and increasingly clear separation between the armed forces and proceed to divide the territory of the Guanabara Bay conurbation in different municipalities, by factors resulting from

the urbanization process itself, indirectly contributing to a perception also fragmentary in the history of the occupation of Bahia and its defense system (Santos Júnior, 2010).

Due to the historical value of its assets, the Forte Duque de Caxias located in the environmental protection area of the rudder hill which dates back to the middle of the 17th century and was reminiscent of the mid 16th century, was created on the initiative of the program strategy for the defense of Guanabara's Bay.

The present civil community mobilization continues to be of vital importance in securing already forgotten identities and their rights of citizenship. The concern of a portion of the population from Leme's residents, with the harmful consequences of their space surrounding the "Forte do Leme", provokes the existence of a public project that leads to ecological tipping, giving rise to the voice of nature taxpayers who enjoy it constantly.

In the same vein as the study of collective memory, Halbwachs (2013) emphasizes structured memory in identities groups reminding us that we remember our childhood as family members: our neighborhood as members of the local community, our working life in the office, a political party, and so on, such memories being essentially group memories.

Halbwachs (2013) states that "history is the compilation of the facts that occupy most place in the memory of men" (p. 100) and that "in general, a story begins to extinguish a tradition, there is no erases or decomposes a social memory" (p. 101).

Le Goff points out that "collective memory is not only an achievement, it is also an instrument and an object of power". They are societies whose social memory is mainly oral or which are in the process of constituting a written collective memory that better understand this struggle for the domination of memory and tradition, this manifestation of memory "(Le Goff, 1996, p. 472).

It is this same process that is intended to revive and recall historical subjects, or even witnesses of the history lived by a collectivity that brings a practical sense. Perhaps even dare to verify under what circumstances the project to revitalize the Atlantic forest becomes legitimate.

In this way, the testimonies collected tend to demonstrate that memory can be identified as a process of construction and reconstruction of memories, in present-day conditions. As a result, the act of remembering is part of the multiple possibilities for the elaboration of representations and the reaffirmation of identities, built on the dynamics of history (Neves, 2000).

This is the reason to remake the story, rescuing the memory told by agents who fought to preserve the landscape and nature for future generations, in the Morro do Leme episode and turned it into a Conservation Unit (UC), in the process explained below.

METHODOLOGY

Monthly meetings were held at the Center for Army Personnel Studies (CEP), known as "Forte do Leme" through contacts in 2001, belonging to the Environmental Education

Group of the Federal University of Rio de Janeiro (GEA / UFRJ) and held by discussion groups on environmental protection areas in Rio de Janeiro. In "Forte do Leme" there were motions for executive actions, aiming at the formation of a council for integrated environmental management of the environmental protection areas (APAs) of Copacabana and Leme. The military entity emerges in the landscape of the region and today plays a significant role in containing local degradation.

This article is a bibliographical and documentary research in which keeps opportunity to use the oral history briefing through an exploratory interview, as an instrument of environmental awareness of the military of one of the specialization courses of the CEP.

Nine students were encouraged to search for local people who integrated the living memory of the process of reforestation and revitalization of the surrounding biota as part of the process of environmental awareness. The military students were army sergeants, with an average age of 35, coming from several geographical regions of Brazil and some with civil academic training (four students). They located three people who kindly agreed to be interviewed. The main purpose of the interviews was to exercise and bring environmental awareness from the behavior and testimony of the interviewees. They acted based on the objective of reconstituting facts, with exploratory interviews carried out by the author who were to compose with a list of lectures to the Fort of Leme, field recognition of the species mentioned in the study and assisted local environmental management.

The interviews had an average duration of 30 minutes, being recorded and later transcribed for analysis. In view of the ethical principles of research, the subjects were clarified of the study in which they participated, being guaranteed to them all the rights related to the research with human beings. Their identities were safeguarded, having assigned them an identity classification of E1, E2, E3.

The testimonies of these former preservers of APA-Leme and their presence were important in the process of constructing environmental conservation attitudes of the military involved, since they helped to clarify the motivations and legal origins of its constitution, managed from 1987-1990. In the resulting dynamics, some hidden elements of the creation of the APA-Leme and the revitalization of degraded surrounding biota were brought by the agents, as complementary evidence obtained from photographs and documents of the private collection of the interviewees, regarding the episodes of degradation and preservation that occurred.

The choice of the semi-structured interview technique was based on providing the interviewer with a better understanding and insight of the interviewees' perspective, since the free interviews, that is, totally without structure, where the participants of the research speak freely, become a "accumulation of information that is difficult to analyze and often does not provide a clear view of the respondent's perspective" (Roesch, 1999, p. 159). Richardson (1999, p. 160) emphasizes that "it is an important technique that allows the development of a close relationship between people and is a mode of communication in which certain information is transmitted".

The use of the semi-structured exploratory interview has the advantage of the elasticity of duration, allowing a deeper coverage on certain subjects.

In addition, the interaction between the interviewer and the respondent favors spontaneous responses. They allow openings and greater proximity between interviewer and interviewee, which allows the interviewer to touch on more complex and delicate issues, that is, the less structured the interview the greater the favoring of a more affective exchange between the two parties. Thus, these types of interviews collaborate a great deal in the investigation of the affective and evaluative aspects of informants that determine personal meanings of their attitudes and behaviors. The respondents' spontaneous responses and the greater freedom they have may cause unexpected questions to the interviewer that may be of great use in their research (Sellitz et al., 1987).

The memory was deepened in the emphasis of reconstruction of concepts and deconstruction of environmental prejudices, based on an experience of class and practice: each military student had the opportunity to learn by the dynamics, motivation, attitude, experience and concepts presented by deponents experienced in the preservation of the area.

RECONSTITUTION OF MEMORY: HISTORICITY, SPACE AND BOTANY

The excerpts from the interviews that were most related to the development of facts, documentary and bibliographical evidences regarding attitudes towards conservation, revitalization and preservation, led to the emergent categories (Bardin, 2011) in Table 1.

1. Landscape preservation
2. Landscape degradation
3. Forest degradation
4. Environmental impact of war forts
5. Arson
6. Occupancy of hills with quality of life
7. Creation of APA after reforestation
8. Active ecotourism

Table 1: Emerging categories of analysis related to environmental attitudes

LANDSCAPE PRESERVATION

Aiming at preserving these architectural ensembles, legal instruments of public authorities have been multiplying, geared directly towards the preservation of historical-cultural and environmental heritage. The legal protection guarantees the maintenance and the valorization of its physical characteristics, not excluding, however, proposals of new uses, as long as they are compatible with its original morphology. On the other hand, the physical situation and the privileged location of these fortresses transform them into highly valued assets in the face of the real estate market, making feasible proposals for adaptations of self-sustaining uses that allow the formation of partnerships, supports and sponsorships.

In order to improve the visitation, the Rio de Janeiro State Environment and Conservation Secretariat (SMAC) requested a study from the Federal University of the State of Rio de Janeiro (UNIRIO) foreseeing management strategies for three Carioca Conservation Units (UC) abandoned by the public power: the Areas of Environmental Protection – APA of the Morro São João and Babilônia and the Leme and Urubu and the State Park of Chacrinha (PEC). The results of this study (Sinay et al., 2012) established the creation in 2013 of the Municipal Natural Park of the Carioca Landscape by Decree nº 37,231, being the first Park created in Brazil based on sociological / tourism studies and not deep biological studies, as usual until then (Figure 2).



Figure 2: Situation of the hills of Leme, Babilonia, São João and Urubu. Natural Park Carioca Landscape

Source: Transcarioca Trail

LANDSCAPE DEGRADATION

For issues such as dryland salinity and biodiversity loss, the response of landowners as a whole is clearly insufficient to curb degradation processes. E3 cites her experience with this loss on Leme hill: “we plant watermelon, pumpkin, all to combat the grass colonium and reforest. In the end, we planted daisy. We made this a daisy garden with seedlings. We knew that this would be lost, but the goal was not daisy, but the seedlings...”.

In order to recover, improve and preserve the productive capacity of a soil, it is necessary to use conservation practices, whose success depends on the awareness and effort of the whole community (Dumanski et al., 2006; Osaki 1994; Pannell et al., 2006).

Recently, cultural patrimony bodies have increasingly been watching over some of these monuments, especially as technological changes in defense techniques have pointed to the inescapable obsolescence of their functions and that environmental awareness has

been becoming alert to issues such as pollution, deforestation, occupation of slopes or garbage. Thus, measures have been adopted protecting one or other Fort and its environment (Santos Júnior, 2010). However, they are incipient to the point that they are still not concerned with designing an integrated environmental action program and management.

It is important to emphasize that the hills of Rio de Janeiro have slums (named “favelas”) of varied nature, presenting less or more ecological profile, where Environmental Conservation Units (UC) have been created, forming part of the city’s social and environmental space.

FOREST DEGRADATION

E1 makes his comments:

year after year, the forest was burned and occupied by the *panicum maximum* (African grass that is combustible while dry (...)). This process of forest degradation began in Babilônia hill, spreading to the summit of Urubu hill and already threatened Leme hill.

Environmental programs have sought to encourage owners to adopt conservation practices, mainly through the dissemination of social information and processes and, to a certain extent, through the payment of financial incentives. Some conservation practices, such as the application of limestone for the treatment of acid soils; the adoption of reduced tillage (no-tillage); the level cultivation by means of the implantation of systems of curves of levels, terraces or barriers of contention of slopes; the implementation of windbreak systems in production areas; the use of low volume irrigation systems; or soil management; the balanced application of chemical inputs and the careful management of waste and waste, coupled with practices for the conservation of natural resources, such as the conservation of springs, bodies of water and Permanent Protection Areas (PPAs) have been the basis of orientation of the extension services and government agencies related to water resources management.

E1 continues with his narrative:

there were about twelve hectares of very well preserved Atlantic forest with rocky coast with native species practically unchanged until the episode of fires (beginning of years 1980) that were propagated from Babilônia hill and that were directed to the Urubu hill and also to the slope that gives to the “Pedra do Anel” (a stone of rocky coast, named ring stone).

In Brazil, historically the conservation units were created especially to preserve the natural resources, avoiding, whenever possible, any form of use of nature. It was believed that, beneath this legal vial, nature would be safe from society.

Fires provoked and propagated by the grass-colonies in the 1980s furthered the destruction of the landscape that frames Copacabana Beach, the Pão de Açúcar hill and the Duque de Caxias Fort, at the Leme point. E1 presents the scenery:

based on the studies of the first area with the grass, a series of articles were produced, aimed at the alert "Leme forest can catch fire", "Grass-colonies occupies the slopes of the old Fort, the same area recovers in its vegetation, with seedlings planted", "Commemoration of the 2000 seedlings planted", to be able to "revenge" the cultivation of species other than grass-colonies. There were innumerable experiments with other types of plants and vegetation until one of them was ideal for the grass.

Parallel to the devastation and reforestation of this area, the city of Rio de Janeiro has been marked in recent decades by the expansion of crime, especially drug trafficking. In addition, studies conducted in recent decades have indicated that population "gaps" gave way to other illicit activities such as hunting, capture and trafficking of wild animals, extraction of resources (wood, minerals, palm hearts, etc.) and, in the case extreme of Rio de Janeiro, shelter to the drug traffickers. During this period, several Carioca conservation units were used by criminals to hide drugs, weapons and bodies and for robberies, facts that for years prevented public visitation. In this context, the perception about tourism and public visitation in general has begun to change. Visitors are beginning to be seen as "allies" in monitoring, since, like managers, they want environmental quality to be maintained or improved, and they are willing to control (photograph and denounce) the misuse of natural areas (Moraes & Irving, 2013).

Since 2009, Pacifying Police Units (UPP) has been installed in the hills of Babilônia, Chapéu Mangueira and Tabajara, motivated by international security in major events. Crime has declined significantly in these conservation units and the number of visitors has started to grow as well as employment and income opportunities, both in terms of activities in environmental education, tourism and leisure trails as well as in the support structure, hotels, restaurants and small points of street food trade (Sinay & Pena, 2014).

The reforestation project of the Babilônia hill was considered one of the most successful projects in the world since the reforestation of Tijuca Forest, being presented as a success case in Rio + 20. This recognition, together with the installation of the UPP, aroused greater interest in the enterprise, which since then has been working on the dissemination of its work in a green area recovered in the heart of the noble zone of Rio de Janeiro.

ENVIRONMENTAL IMPACT OF WAR FORTS

In 1763, Brazil passed to the category of Viceroyalty, being the seat of the government transferred of Salvador to the Rio de Janeiro, which increased its importance and caused greater lust of pirates, forcing to the reinforcement in the defenses of the City. The Marquês do Lavradio (2 Viceroy, 1769-1779) took pains in the construction of several fortifications.

Part of the Atlantic Forest was removed for the construction of the fortifications at the top of the Babilônia and Leme hills and for the opening of its access roads known as Caminho do Telégrafo (Cardoso, 1986) and Estrada do Forte (1 km long). There was also

the Inhangá artillery battery, which was in the middle of the beach, in Inhangá hill (Riotur, 1992, p.18).

The need for defense of Rio de Janeiro from french, english and dutch invaders caused the hills to be occupied militarily. In 1710, the French Duclerc landed at Guaratiba. He crossed Jacarepaguá and Camorim, being defeated when arriving at the City. But in 1711 Duguay-Trouin invaded the Guanabara Bay with seventeen ships and sacked it (Cruls, 1965, p. 133).

In 1722, with fear of a new invasion, "the Redemption of the Helm", in Babilônia hill (CEP, 1990, p. 7) was created. It consisted of a stone wall with two gates that closed Leme slope near São João hill. Its purpose was to defend this entrance from Rio, dominating the road that linked Copacabana to Botafogo. Even today, part of the wall can be seen on the site. Later, "Forte do Vigia", which now belongs to the area of the Center for Personnel Studies of the Army, was garrisoned by a Mining Dragons Company with "Tiradentes", the Ensign Joaquim José da Silva Xavier, as indicated by a source, served there in 1789 a few days before his arrest (CEP, 1990).

In fact, since the 16th century, with the foundation of the city of São Sebastião do Rio de Janeiro and the village of São Lourenço, on both sides of the Bay, the geometry of fortresses and fortresses began to punctuate the coast, with their mouths of fire, both the movement of the ports and the comings and goings of religious processions, and the incessant work of the mills situated in the rural rear.

The memory of a people encompasses the testimonies of all the institutions created by men and every manifestation of their creation. In this collection of memories, those of a military character are very important for the history of each nation, and it is up to the military to preserve them as a regimental and ethical mission, but also to every community, since cultural memory is a patrimony of all. E2 comments:

this historical patrimony, which was bequeathed to us with much blood spilled, represents directly the guarantee that the protection and conservation of this area will continue to be effective. On the other hand, the permanence of the army in this place will be a further burden to be placed on the intention of real estate lodges that have merely commercial interests, without giving importance to the diversity of species that depend on the preservation of the place.

In addition to the written and iconographic documentaries, military objects and artifacts, military buildings, especially fortresses, are a living presence of history and visual references in the image of the city, being landmarks of urban evolution and history which is in the affirmation of E2, in this excerpt:

I am in favor with the presence of the army in the Leme area, because it contributes greatly to the preservation of the site and, especially, to the strict control of the people who enter the protected area. The presence of the army in the place was of fundamental importance when reforesting the

hills, on the occasion of the fires provoked and by the existence of the patrimonial patrol, responsible for the control of the traffic in prohibited areas.

Since the 19th century, the entire region has been radically impacted by fortifications and other military uses, through the Alaor Prata tunnel (which crosses Babilônia hill linking Botafogo to Copacabana), the subway (which passes below São João hill and PEC), the slums (from Chacrinha, removed in the 1970s, Chapéu Mangueira, Leme and Tabajara), the tall buildings that changed the dynamics of the wind and the birds and the dumping of garbage.

ARSON

In this process of occupation, the native forest gave way to a weed which often burned to form an enormous and sometimes uncontrollable fire. E2 claims that some fishermen from the region are in transit to the fishing grounds near the rocky coast: "as they threw lit cigarette stubs and set fire to the colonies in order to improve their access to the ring stone, where they fished".

But the efforts to contain the propagating weed were many, since it multiplied at a frightening rate. E3 describes a moment:

We started working and I remember one day Monday when we had cleared this area the previous Friday. My machine operator, very annoyed, said:
– "I can not stand the work, I cut it and it grows". Then I decided to cut a clump of grass.
– "Cut here!" I timed. In fifty-five minutes, he had already grown four centimeters ... That was clear!
– "Tis no use cutting, then! Let's pluck it, let's turn the clump, and lay on rows on the same level curve, with the root up broken!

In the 1990s, the surrounding population was encouraged to cooperate against degradation. E1 portrays that:

at the time, there was a shooting booth in the middle of the elevations. At the time, it was all deforested for its construction. Later it was abandoned and the grass grew rapidly (grass-colonies), causing people to set fire to small paths for fishing, the tip of Emparatis and the tip of Gameleira. The grasshopper grew too much and with that the forest did not regenerate in time, forming a vicious circle of growth and cut every two or three months.

E1 also states that the degraded area began to be closed by the effort to remove the grass and colonies by planting several native tree seedlings of the region.

The region was full of opportunities, due to the panoramic view and tropical beach climate. Festivities encouraged the people with the frequent use of pyrotechnics for promotional purposes. E1 says that:

in 1989/90, there were no events on the rock but only on the beach. In New Year's Eve 1991, a steakhouse asked for new permission to fix a steel cable at the top of the escarpment to facilitate the pyrotechnic show scheduled for the party. However, in the afternoon, a wooden structure of 49 square meters was hoisted with cables, scraping the rocky vegetation. The team that had begun a month ago, the work of revegetation of the degraded area in this area, when it verified the fact, requested aid to the army that reinforced to be an area of environmental conservation. The person in charge of the installation assured that he would "also be an ecologist" and that if there was any risk, he would not ignite the fires. We left with the deal. At midnight, the pyrotechnic event began. A few minutes later, a wick was lit from the foot of the hill, setting fire to the logo in the middle of the escarpment. This made its publicity but, staggeringly, also burned almost all the rupicultural vegetation of the area.

As for the factors that contributed to the degradation of the area, E1 presented documents (Senna, 1993a, 1993b) and commented on commemorative posters under the supervision of the team of the Reforestation and Environmental Conservation Project of Leme Hill, newly composed:

the celebratory events carried out on the escarpment brought positive points only to its organizers, because the native ecosystem has always been harmed. In the new year of 1988, a steakhouse asked permission to the CEP Study Center which is the "owner" of the area, to put a strip on the escarpment. It represented a white dove greeting the New Year. For the passage of the cables that fixed the strip to the coconut trees of the top of the rock, they cleared the shrub vegetation that "disturbed" the act. The team of the Reforestation and Environmental Conservation Project of Leme Hill looked for the then commander of the CEP, who immediately sent a patrol to restrain the act. In addition, a metal piece that made up the band's structure fell from the top, going into a thicket of vegetation, in the middle of the escarpment, threatening the passers-by below for months on end until one day it disappeared. The deforested area was soon occupied by grass colonies, which a few months later caught fire and killed one of the coconut trees. To this day, after five years, the area is degraded, threatening the adjacent forest with fire.

In a recent visit to the site (2016), it is observed that pyrotechnics continue to be launched, but more frequently from the beach with permission of the commanders of the local forts and fortresses, so too. Time and again, fires and balloons are seen in the direction of the hills and the fires are still in the area, but it does not have the same proportions as before.

OCCUPANCY OF HILLS WITH QUALITY OF LIFE

Some slums in Rio de Janeiro such as Babilônia and Chapéu Mangueira can be considered ecotourism slums, since their associations of residents are interested in sustainability actions, identify themselves in the promotion of the quality of life, offering a proposal of tourism with sustainable consumption. However, the idea of ecological slums will only appear in the context of the mega-events directed by major public policies related to the UN Conference in 2012 (Rio + 20), which amplified the tourist attractions. In Babilônia, between 1930 and 1940, the growth was due to the soldiers of the Leme Fort who were not able to live in Leme or Copacabana and who built their spacious houses with backyards on the top of the hill. Chapéu Mangueira, which is a hill next to it, presents smaller and denser houses, as a result of the expansion between the years 1940 and 1950, when migrants from Minas Gerais and Northeastern states came to Rio de Janeiro to work in the civil construction of neighborhoods of Copacabana and Ipanema. As we have seen, all these slums received a Peacekeeping Police Unit (UPP), which aroused greater interest in promoting and stimulating visitation to the reforestation area.

E1 recognizes the importance of sensitizing villagers to contain the devastation:

with the cutting of the grass and keeping the area clean, the spread of fires was much lower. The Social Development Secretariat, hiring workers from the slum to the reforestation service above the slums of Chapéu Mangueira and Babilônia, encouraged the "Mutirão" Project, whose mission was to reforest the side. Outbreaks of fires were coming from this area and it was believed that, as the workers were from the favela, they would be more committed to the preservation of the place, taking a liking to work and charging the inhabitants a greater commitment (...).

The Mutirão Project (1981-1984) aimed to promote the expansion of public services for about 150 slums, with the participation of the local population in the planning and implementation process. The works were carried out with voluntary labor and focused on infrastructure construction, basics sanitation, renovations and construction of day care centers. These actions of the Mutirão were object of interest from illustrious visitors like Jimmy Carter in 1984 and Princess Anne in 1986 (Bottino, 2016).

In 1986, the subproject Mutirão Reforestation, from the Mutirão Project was created, aimed at restraining hillsides, recovering vegetation, springs and springs, and replacing the landscape. According to the City Hall of Rio de Janeiro (2008), the Mutirão Reforestation Program began effectively in 1987. One of the most well-known reforestation efforts is in Babilônia and Chapéu Mangueira, which began in the late 1980s and early 1990s.

By the records of the Residents' Association of Lauro Müller and Adjacencies (ALMA), in the 1980s, the expansion of occupation on the hill aggravated the fires caused by extensive cover of grass colonies. Fires were a risk for slum residents, but they also affected Shopping Rio Sul and the residents of Lauro Müller and Ramon Castilha streets, represented by ALMA, in Botafogo.

All the interviewees (E1, E2, E3) stated that the teams worked hard against the causes of the fires and with technique for the success of the company, which had an integrated motivation and logistics.

CREATION OF APA AFTER REFORESTATION

In addition to original specimens of the flora in more than 12 hectares of Atlantic Forest typical of rocky outcrop of the coast that were kept in good condition by the selective use of the area, more than 80 species of birds seeking shelter, food or landing has been transported in the place. They stand out natives names like tié-sangre, saira-azul, sabiá, falcão-carijó, cambaxirrão (with its strong corner), among others.

The UC in Rio de Janeiro is specifically protected by state Decree nº. 2.853/69, which created the Aldir de Castro Dantas Park, commonly called "Chacrinha" (PEC), with the purpose of designating an area for the collectivity of the neighborhoods of Copacabana and Leme, which takes into account the local population density and the preservation of the natural ecosystem, allowing research, development of activities of education and environmental interpretation, recreation, in contact with nature, and ecological tourism; by Municipal Decree nº. 14.874/96, which established the Environmental Protection Area (APA) of Babilônia and São João hills, with the objective of recovering and recovering existing vegetation cover, preserving and assembling rare, endemic, threatened species or insufficiently known flora and fauna, to protect sites of exceptional beauty and scientific value, to stimulate leisure activities, when compatible with the other objectives of the APA, and to protect and value the surroundings of the natural well.

With the reforestation, it happened to the proposal of ecological tipping of this APA to the government of the state of Rio de Janeiro.

E1 states: "the many meetings we had and the hours we spent on the field could be easily forgotten. So we used our contacts and influential people that we had to get the matter to the Governor of the State".

The municipal Decree nº. 14.008/1995, created the APA of Morro do Leme, Urubu and Cotunduba Island, and prohibited the subdivision of all degraded or potentially degrading activities in the whole territory of the PA, new constructions, with changes in gears, volumetric use of existing buildings. E2 says that:

it was a day of great joy for me, when I saw that document that created the limits of the area where so many people were involved and sweat. I felt rewarded for the acknowledged effort. I was thrilled... I have celebrated a lot with my friends and co-workers!

E3, in turn, states: "I never waited for immediate recognition, because in my profession I learned that nature responds slowly but firmly. We made APA's proposal come out of the role, before it had a role!"

The National Register of Conservation Units (CNUC) has made a notable advance with popular participation in the last ten years, since the creation of the National System

of Conservation Units (SNUC). However, the new protected areas still characterize Brazil as the least spend with it, compared to other countries considered as a reference in the conservation context, such as South Africa, Australia, Canada, Costa Rica, United States, New Zealand. For example, while Brazil spends an average of about US \$ 4 per hectare, the US allocates US \$ 78 / ha, South Africa US \$ 34 / ha and Costa Rica US \$ 18 / ha. (Medeiros & Araújo, 2011, p.153, 157).

These areas of Rio de Janeiro and now legally protected were organized by different entities since its creation, standing out the Workers' Cooperative for the Reforestation of Babilônia hill (CoopBab), Florescer NGO, Brazilian Army (EB) and Ecological Action Group (GAE), initiating the areas reforestation.

ACTIVE ECOTOURISM

Visitors and managers interviewed are anxious to promote sustainable tourism, environmental education, encouraging the development of scientific research and attracting more resources to improve existing structures and promoting the UC by giving them greater tourist visibility. Among the reasons for the visitors to be visited are the infrastructure (from the PEC), hiking on the trails, trips with children, rest, parties, contact with nature, breathtaking views of the city, climbing routes, soccer and fishing.

For E2 "the location of Forte do Leme is wonderful in every way. I think that if the military is also a tour guide with training and environmental education, we all win".

As for the trails, the PEC with a total area of 13,3 hectares of Atlantic Forest has a trail of 1260 meters that can be covered in approximately 40 minutes. The physical effort required for this course is not strong which classifies the trail as light, especially since most of the course is covered by trees which makes walking on almost flat terrain easier. The trail of São João hill has a course of 2.800 meters to be carried out in two hours. By reaching an elevation of 384 meters, the effort made is moderate and the trail is qualified in the same way. The tracks of the Leme and Urubu hills can be completed in 1 hour, reaching 158 meters in height and that of the Babilônia hill, which reaches 150 meters in height and whose route can be done in an hour and a half, are also classified as moderate, because parts of them are exposed to the sun requiring more effort from visitors. Only the trail of Babilônia hill has informative signs, while the remaining ones either have scarce signage or do not have any signs. As for the negative impacts on the environment associated with the visitation, the interviews indicated garbage accumulation, soil erosion and compaction, destruction of existing signaling plates. In field visits only the first two impacts were effectively observed (Sinay & Pena, 2014).

CONCLUSIONS

The integrated education with the military lectures of Forte do Leme, the recognition in the field of the species mentioned by the interviewees and the local environmental management assisted by them, were an important experience and significant for all

those who were present. The military students of the Brazilian Army who went through the process of environmental awareness lived by the agents interviewed, having contact with the described reality lived and received from them through arguments and attitudes being favorable examples to environmental preservation arising as (1) a cognitive, for the information related to the monitoring and environmental management of part of the military area about which they did not know the details and that showed angles of the validity of the role of the army as important in the process of revitalization; (2) a positive psychological reinforcement, facilitated by interactions with environmental agents endowed with ecological awareness in exemplary behavior; and (3) a symbolic deconstruction of the prejudice and relativism with which environmental agents were understood. With regard to environmental awareness and preservation, this initiative with the military favors new episodes of progressive civilian education by military personnel, which is a necessity for civil-military interaction for preservation, as in part of a descriptive memorial from the land occupied by the Center for the Study of Army Personnel and Fort Leme, there are ruins of fortresses and old observation posts.

The results point to the necessity to develop activities at the environmental nature with the public local and with the tourists in general attempt with the provision of preservation attitudes in the areas covered by the Guanabara Bay forts. Such activities could be marked by the partnership between environmental entities and groups, represented by this reported experience from a series of them, in order to reduce the ecological impact due to tourism. Finally, by valorizing the fortress system, an important cultural heritage, reveals a significant part of our history and certainly corroborates actions aimed at the tourism activities, preservation of memory, environmental education and environmentally conscious interventions.

We expect that such experience of didactic use related to the Leme's memory, rescued by the interviews and experiences of the subjects interviewed, will allow a better evaluation of military attitudes like the conservation and cataloging the effective military participation in environmental operations. The proximity of the population denseness for the facilities of the Fortress (Fort Duque de Caxias) further intensifies the idea of reinforcing memory as a reason for its own survival as an identity group.

Translation: Tamar Prouse

REFERENCES

- Andrade Junior, H. (2000). Educação ambiental: sensibilização populacional e desenvolvimento sustentável. In S. da Mata et al. (Eds.), *Educação ambiental: compromisso com a sociedade* (pp. 11-18). Rio de Janeiro: MZ editora.
- Bardin, L. (2011). *Análise de conteúdo*. SP: Edições 70.
- Bottino, C. M. M. (2016). *Quem descobriu a favela? A trajetória das agências de turismo nas favelas cariocas*. Professional Masters dissertation, CPDOC, Rio de Janeiro, Brazil. Retrieved from <http://bibliotecadigital.fgv.br/dspace/handle/10438/17655>

- Cardoso, E. et al. (1986). *Copacabana, história dos bairros*. Rio de Janeiro: João Fortes Engenharia.
- Centro de Estudos de Pessoal do Exército (CEP). (1990). *Ementa das origens do Forte Duque de Caxias (1708-1990)*. Rio de Janeiro: Memoteca.
- Cruls, G. (1965). *Aparência do Rio de Janeiro* (V. I). Rio de Janeiro: José Olympio Editora.
- Dumanski, J., Peiretti, R., Benites, J. R., Mcgarry, D. & Pieri, C. (2006). The paradigm of conservation agriculture. In *Proceedings of World Association of Soil and Water Conservation* (pp. 58-64). Retrieved from https://www.researchgate.net/publication/284061910_The_paradigm_of_conservation_tillage
- Halbwachs, M. (2013). *A memória coletiva*. São Paulo: Ed. Centauro.
- Le Goff, J. (1996). *História e memória*. São Paulo: Unicamp.
- Medeiros, R. & Araújo, Fábio F. (Eds.) (2011). *Dez anos do sistema nacional de unidades de conservação da natureza: lições do passado, realizações presentes e perspectivas para o futuro*. Brasília: MMA.
- Moraes, E. A. & Irving, M. A. (2013). Ecoturismo: encontros e desencontros na reserva extrativista do Cazumbá, Iracema (AC). *Revista Brasileira de Ecoturismo*, 6(3), 738-757.
- Neves, L. de A. (2000). Memória, história e sujeitos: substratos da identidade. *Revista História Oral*, 3, 109-115.
- Osaki, F. (1994). *Microbacias: práticas de conservação de solos*. Curitiba: Paraná.
- Pannell, D. J., Marshall, G. R., Barr, N., Curtis, A., Vanclay, F. & Wilkinson, R. (2006). Understanding and promoting adoption of conservation practices by rural landholders. *Australian Journal of Experimental Agriculture*, 46(11), 1407-1424.
- Prefeitura da Cidade do Rio de Janeiro. (2008). *Mutirão reflorestamento: 20 anos*. Rio de Janeiro.
- Richardson, R. J. (1999). *Pesquisa social: métodos e técnicas*. São Paulo: Atlas.
- Roesch, S. M. A. (1999). *Projetos de estágio e de pesquisa em administração: guias para estágios, trabalhos de conclusão, dissertações e estudos de casos*. São Paulo: Atlas.
- Riotur. (1992). *Copacabana, 1892/1992: subsídios para a sua história*. Rio de Janeiro: Secretaria Municipal de Cultura.
- Santos Júnior, J. C. (2010). *Plano de revitalização e uso turístico-cultural das fortificações históricas da baía de Guanabara*. VI Seminário Regional de Cidades Fortificadas e Primeiro Encontro Técnico de Gestores de Fortificações, UFSC: Florianópolis. Retrieved from http://cidadesfortificadas.ufsc.br/files/2011/03/2010_6sem_palestra_JoseClaudioSantosJr.pdf
- Selltiz, C. et al. (1987). *Métodos de pesquisa nas relações sociais*. São Paulo: EPU.
- Senna, P. (1993a). *Ocupação humana, alteração ambiental e conservação da natureza no bairro do Leme*. Monografia de curso de especialização, Pontifícia Universidade Católica do Rio de Janeiro, Rio de Janeiro, Brasil.
- Senna, P. (1993b). Impacto ambiental causado por eventos comemorativos na escarpa rochosa do Morro do Leme. *Revista Albertoa* 3(15), 141-152.
- Sinay, L. et al. (2012). *Uma proposta estratégica para o ótimo aproveitamento turístico dos Morros da Babilônia, São João, Leme e Urubu e do Parque Estadual da Chacrinha*. Universidade Federal do Estado do Rio de Janeiro: Rio de Janeiro.

Sinay, M.C. & Pena, I.A.B (2014). Parque Natural Municipal da Paisagem Carioca (RJ): ecoturismo e sustentabilidade. *Revista Brasileira de Ecoturismo*, 7(3), 500-516.

Telles, F. P. et al (n.d.). *Coleta de dados que subsidiem a avaliação dos projetos de reflorestamento para o bairro do Leme, RJ, visando a possibilidade de sua ampliação*. Mimeo.

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Submitted: 28-02-2018

Accepted: 22-06-2018