CLAIMED FROM THE DEPTHS OF THE RIVER CURUÁ: WOODEN TRUMPETS IN AMAZONIA AND APPROACHES TO REVITALIZATION BASED ON AN ARCHAEOLOGICAL FIND

RESGATADO DO FUNDO DO RIO CURUÁ: TROMPETES DE MADEIRA NA AMAZÔNIA E ABORDAGENS DE REVITALIZAÇÃO A PARTIR DE UM ENCONTRO ARQUEOLÓGICO

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Resumo

This article examines the discovery and potential revival of a previously undocumented side-blown, palmwood-made trumpet found in the Curuá River, in the Middle Xingu region, currently housed in the archaeological collection of the Museu Paraense Emílio Goeldi. The article outlines a methodology for the instrument's analysis, which includes non-invasive documentation, a literature review, and plans for a reconstruction. It also considers the challenges and possibilities of reintroducing the trumpet into contemporary indigenous music, contributing to the current movement of musical revitalization. The organological properties of the instrument are considered regarding their implications for its sound and potential music-making.

Palavras-chave:

Trumpet; organology; music archaeology; Amazonia; Curuaia.

Abstract

Este artigo examina a descoberta e a potencial revitalização de um trompete de sopro lateral, fabricado em madeira de palmeira, anteriormente não documentado, encontrado no rio Curuá, na região do Médio Xingu, atualmente no acervo arqueológico do Museu Paraense Emílio Goeldi. O artigo apresenta uma metodologia para a análise do instrumento, que inclui documentação não invasiva, revisão bibliográfica e planos de reconstrução. Considera também os desafios e as possibilidades de reintrodução do trompete na música indígena contemporânea, contribuindo para o atual movimento de revitalização musical. As propriedades organológicas do instrumento são consideradas em relação às suas implicações para o seu som e potencial musical.

Keywords:

Trompete; organologia; arqueologia musical; Amazónia; Curuaia.

INTRODUCTION

This article focuses on the archaeological find of a trumpet from the Curuá River in the Middle Xingu region preserved in the archaeological collection of the Museu Paraense Emílio Goeldi in Belém (see Figure 1). Focusing on this previously unidentified and unstudied instrument, this article outlines implications and approaches for the revitalization of an archaeologically documented trumpet and its music, including a review of the side-blown trumpet as part of the musical traditions in the Amazonian region. In addition, we explore the question of the musicality of these instruments and their potential for the current movement towards reconstructions and reinterpretations of indigenous musical practices. This approach is new insofar as the organology and the musical practice of wooden, side-blown trumpets in the region have not been studied so far. The objective is not to construct a full historical account, as the available data is too limited, but to create a body of knowledge by integrating various sources and practical insights, which will support the revival of the music. Additionally, these previously unexamined artifacts offer a chance to contribute to the study of trumpet organology in Amazonia, building on the work of previous researchers. We then elaborate plans for the recreation and revitalization of the instrument and its discontinued musical existence.

The catalogue of the archaeological collection in the Museu Paraense Emílio Goeldi mentions a "trombeta" from the river Curuá with the description "A long, conical instrument, built from the junction of two sides of wood, divided into four parts" (Barros *et al*., 2021, p. 59). This object attracted our attention for several reasons. One obvious and informative feature of the instrument, clearly visible in the initial catalogue photos, is a square-shaped opening with rounded corners in the tube. The opening is clearly crafted and suggests the embouchure of a side-blown trumpet (Hornbostel and Sachs, 1914, p. 589, Nº 243.122). The instrument was found on the Curuá River, in proximity to the territory of the Curuaia. We propose a plan for comprehensive research on this instrument, leading to its reconstruction and the revitalization of its music.

Musical instruments, as material objects, are deeply tied to the social context from which they emerge. Their material properties allow them to endure or adapt to shifts in their surroundings. Some instruments maintain their original form and function over centuries, even as their cultural symbolism, societal role, and stylistic uses evolve. Meanwhile, others change in response to new technologies and shifting social dynamics (Alperson, 2008; Dawe, 2003; Wey, 2023). Some disappear for long periods, only to

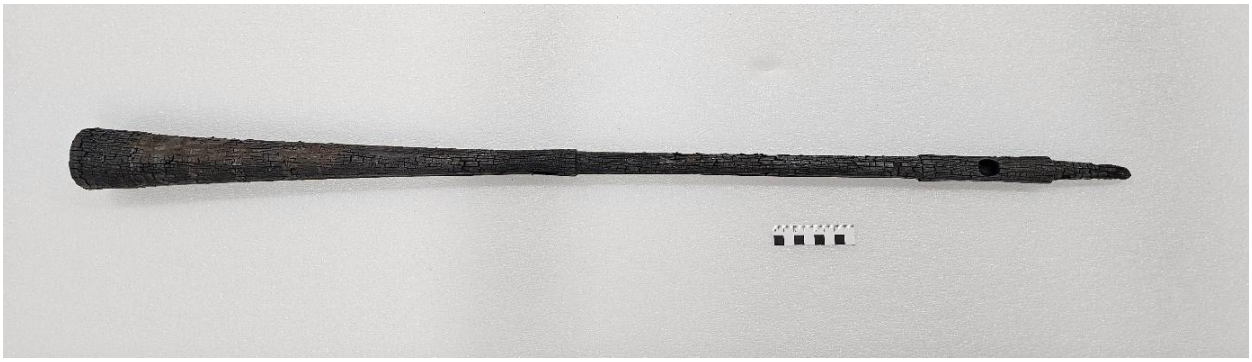


Figure 1 – Trumpet in the archaeological collection of the Museu Paraense Emílio Goeldi, Sign. 1958. Photo by the authors, 2024.
Source: Museu Paraense Emílio Goeldi.

be rediscovered and revived for study or artistic expression. These transformations reveal a complex interplay between the instrument as a physical object and its perception. This includes tensions between the sacred and the profane, and between heritage and innovation. Experimentally reconstructing and testing the properties of instruments from historical sources and the sonorous characteristics of archaeological musical instruments (Both, 2008, p. 8) has been the subject of lively research in recent years (Fang, 2023; Rodà *et al*. 2021; Serafin and De Götzen, 2009; Bellia, 2019). An in-depth approach to studying artifacts, even with limited source information, was already applied in the 1950s during studies and debates on the Annan lithophones (Schaeffner, 1951; Husmann, 1952; Kuttner, 1953). In those studies, the tonal properties of the presumed musical instruments were measured to reconstruct a tonal system, leading to debates on what can be derived from the study of material musical artifacts. A music archaeological study by Barros (2023) sets a precedent for the replication of musical instruments in the state of Pará. It examined several aerophones from the archive of the Museu Paraense Emílio Goeldi, selecting pieces in good condition with one to three holes, along with sets of globular flutes. Ongoing research examines additional objects in the museum archive that have not been studied before.

MOTIVATION AND METHODOLOGY

In ethnomusicology, there is increasing momentum around the practices of returning, transferring, or sharing sound recordings with the communities from which they originated. The discourse is shifting from the preservation of objects to the creative process of revitalization. It is suggested that recordings should be resocialized by curators and archivists, regardless of whether they will be transferred back to the Indigenous collective or kept as entities entangled within a museum or archive (Lewy; Brabec, 2023). Museum archives were often created to preserve music that was either lost, like archaeological artifacts, or endangered and expected to disappear, as with ethnographic collections. These efforts aimed to safeguard cultural heritage at risk of being lost. Not too long ago, the musical traditions of Amazonia were regarded by anthropologists as disappearing remnants; "to speak about the future of Amazonian music is, in a way, something new", Beaudet (2011, p. 85) opened a lecture on the topic of the future of music. Today, the situation is different. Not only have fears of indigenous musical traditions disappearing proved unfounded, but there is also renewed interest in reviving music, dance, and rituals that had fallen out of practice. Resources for reviving music include surviving sound recordings, images, and artifacts, often preserved in museums. When music is passed down through generations, even a single generation's hiatus can interrupt the tradition and result in the loss of knowledge. Our method of analysis includes an organological study and description of the instrument, along with measurements and photography. Due to the instrument's fragility, direct handling or experimentation was avoided. We are conducting a literature review to explore the instrument's potential origins. We plan to reconstruct the instrument in the future, using original or alternative materials with the help of local artisans.

At this stage, we are assessing the requirements for reviving the musical object. This is a complex endeavor, particularly as the instrument points to an unknown musical past and offers few immediate clues. When confronted with the object, we are prompted to consider its relevance today and the implications of its recovery. We compare the instrument with organologically related indigenous instruments preserved in other collections, considering that they may offer valuable insights even though their time and place are not identical. A contextualization helps us better understand the object of study but has clear limitations: space and time between the objects are not delineated and there are different sound ontologies among different indigenous groups. The possible function of this undated archaeological object can be partly inferred through ethnographic research and travel accounts, though these must be interpreted within their historical context and differentiated from direct observations.[1]

'SIMPLE' AND 'COMPLEX' TRUMPETS IN AMAZONIA

We review existing documentation on wooden trumpets in the Amazon region as a foundation for further research. Most evidence on side-blown wooden trumpets stems from early 20th-century ethnomusicologists. The decline of this musical tradition during the 20th century likely explains the absence of side-blown trumpets in more recent studies. Anthropologists have thoroughly investigated the ritual significance of other aerophones, such as *flautas sagradas* – a term primarily used for clarinets – along with flutes and trumpets, from an organological perspective. Following anthropological studies, much of the research has emphasized the importance of music, often in relation to other art forms, cosmology, shamanism, and philosophy (Bastos, 2021)[1].

The origin of wooden trumpets in Amazonia is disputed. The presence of side-blown trumpets in both Africa and South America has led to speculation about whether cultural transfer occurred. However, this hypothesis is challenged by the existence of divergent types of side-blown aerophones, particularly in the Xingu region (Nordenskjöld, 1920, p. 123). We must also keep in mind that migration hypotheses to explain the origin of musical instruments were once popular in research. These theories were later discarded in favor of a polygenetic explanation, which suggests that similar musical instruments were invented independently in different cultural contexts (Ammann; Kammermann; Wey, 2023, p. 25).

Useful organological information is also found in catalogues and surveys[2]. Izikowitz (1935) used the terms 'simple' and 'complex' to describe instruments made from one material or composed of at least two different materials. Bertolin (2022) revisits the distinction between 'simple' and 'complex' trumpets, made of either one or more parts. According to Izikowitz's definitions, 'the former consist of only one single tube, straight or bent, while the latter have a funnel-shaped bell which is not part of the tube itself but is fastened on to it' (Izikowitz, 1935, p. 216). This distinction is important to consider, as the use of multiple parts reflects the intention to generate different sounds and effects. For example, combining a bamboo cane and an ox horn creates a unique mix of morphological, technical, and aesthetic variations (Salles, 2011, p. 3). Extending the cane by combining two similar materials (horns or wood) or two different materials, as in the previous example, produces a deeper tone. In this case, the wooden trumpet appears to be made from a single material. Related instruments, made from bamboo or bamboo combined with animal horns, are found among the Karajá in Tocantins (Salles, 2011) and the Canela in Maranhão (Camêu, 1979, first documented by Kissenberth in 1911). The larger construction of the trumpet enhances both its visual impact and musical possibilities. The visual and material aspects are crucial. The impression of a long blowpipe is visually striking and likely explains the sideways construction. Holding the instrument sideways makes it much easier to support its weight than projecting it forward (Montagu, 2003, p. 2). More importantly, the design allows for deeper tones, greater sonority, and the ability to overblow the instrument to produce at least two different pitches.

TERMINOLOGY AND SEARCH FOR AN ADEQUATE NAME

How should we properly name the trumpet? The Hornbostel-Sachs classification 243.122 – 'side-blown trumpet' – is useful for contextualizing the instrument in relation to other specimens from the same region and exploring possible connections. We should keep in mind that colonialism introduced confusion in the terminology of indigenous wind instruments due to the adaptation of names from Latin languages. These mixed designations obscure the connection to the mode of playing, and the instruments should be reclassified according to indigenous language and systematics. Therefore, we must be cautious in interpreting instrument names in the literature. For example, in some cases, 'flautas' refers to instruments where sound is produced by vibrating lips (trumpets) or a vibrating reed (clarinets). In this discussion, the term 'trumpet' is appropriate for instruments played by the player's vibrating lips

(labrosone).

In 1921, Emilie Snethlage reported on her research trip along the Curuá River, including a brief section on musical instruments. She recounts: "Musical instruments were never used at the dances I attended, though this does not exclude their use on certain occasions. The larger flutes I collected seem to be used mainly for signaling boats near Malokas; the Indians themselves called them businas [...]" (Snethlage, 1921, p. 412, emphasis added). Although Snethlage refers to flutes, the description of signaling boats could also suggest the use of horns or trumpets. In general, the distinction between flutes and trumpets is not consistent and may vary by context. The term 'busina' is a loanword used for various forms of trumpets and trombones in French (also spelled 'busine,' 'buysine,' 'buzine'). The word derives from the Latin bucina, meaning a long trumpet. This suggests that the term was likely adapted during the colonial period, in the 17th or 18th century, when busina was in use. This description provides valuable insight into the use of the instrument at that time.

Posthumously, the dictionary of Curuaia vocabulary that Emilie Snethlage collected was published by her nephew and godson, Heinrich Snethlage (1897–1939). In this dictionary, we find a potential solution to the nomenclature question: The word "pam" that signifies "large wooden trumpet" (German: Groβe Holztrompete). Snethlage noted that the vowel 'a' sound "almost like an *e*" (Snethlage, 1932, p. 73). The German designation as a 'large wooden trumpet' aptly describes the size and material of the River Curuá trumpet, leading us to tentatively adopt the term 'pam' for the object of our current study. However, we plan to further investigate the musical terms in Snethlage's dictionary, particularly in collaboration with community members[3] and through documenting historical instruments, to refine and update the musical terminology. The complementary term "kúlabari" in the dictionary signifies a "large boat trumpet" (*Groβe Bootstrompete*) (Snethlage, 1932, p. 73). Could this be the previously mentioned 'buzina' in another language? Or is there a distinction between the trumpets that were sounded in the village upon arrival of the boat (buzina) and the 'large boat trumpet' kúlabari that was placed on the boat? Although these questions remain unanswered, the distinctions suggest that trumpets played an active role in Curuaia musical practice, with a variety of trumpets, each having distinct names and functions, in use at the turn of the 20th century. Curt Nimuendajú (1930, p. 325) confirms the meaning of "pam". He transcribes the word "pëm", to be pronounced as the German 'ä', which corresponds to [ɛ] in the International Phonetic Alphabet. He translates "pëm" to the German colloquially as a large "tooter" (*grosse Tute*), which is consistent with the more precise terminology used by Snethlage. In addition, Nimuendajú (ibid.) mentions the instrument name "pëm a", which designates a trumpet with a gourd bell part.[4]

ENCOUNTER OF A WOODEN SIDE-BLOWN TRUMPET 'PAM': HISTORY AND PLACE

The trumpet was located in the River Curuá, a tributary of the Iriri River in Pará state, northern Brazil. The river flows through the Tapajós-Xingu forests ecoregion and is one of the sources of the Xingu River. The catalogue mentions 'a place known as Maloca / Serra do Norberto,' and the coordinates are registered in the database. Figures 2 and 3 show the geography of the discovery site. The site is near Aldeia Curuaia, an area where subsistence fishing and hunting are prominent. The river in this region sees significant boat traffic, reflecting its importance for local transportation and subsistence.

The story of its discovery varies: it was either found and recovered by a fisherman, discovered during mining activity, or possibly both. It was later donated to the Museu Paraense Emílio Goeldi by the Souza and Silva family[5]. The instrument's discovery location is shown in Figures 2 and 3. Historically, the Curuaia as well as the Xipaya also lived south of the location, in the Aldeia Baú (Xipai; Xipai, 2024). The music of the Curuaia is still scarcely documented. However, ongoing research and the establishment of an archive by Edilson Curuaia aim to safeguard this musical tradition (Curuaia, 2024). The instrument may have multiple potential origins, and due to the passage of time, it may no longer be possible to attribute it to a specific ethnicity. If it was

transported along the river, its location could be the result of trade or travel between regions.

The site of discovery is indicated as being at a depth of three to four meters. The instrument was likely covered in mud, which explains its relatively good state of preservation. The age cannot be determined from the object, as the construction and processing of the wood prevent the use of dendrochronological methods. The instrument is very fragile due to the drying process after being submerged in water and mud for a long time. It arrived wrapped in a dried-out blanket, and an attempt was made to maintain 80% humidity, but without success. The wood had retracted, and the instrument, originally dark brown, had no graphics or engravings.[6]

The instrument was found alongside a polished stone axe that probably dates to the same historical period. The wood was identified by technologists at the Museu Goeldi as Paxiúba[8], the 'walking palm' (Socratea exorrhiza, see Figure 4) is a species of palm, native to the Amazon rainforest. It is of unusual interest due to the shape of its trunk and roots, which give it a curious appearance and have sparked many theories regarding their function (Vilhena; Lins;

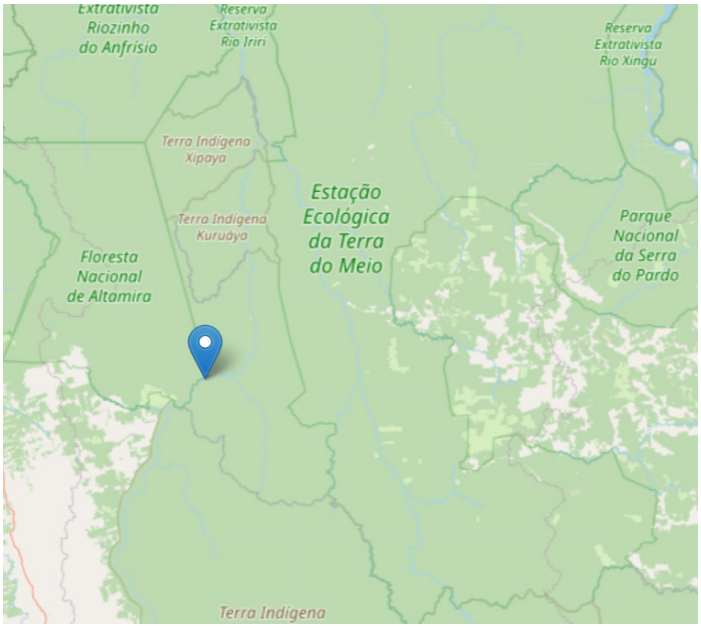
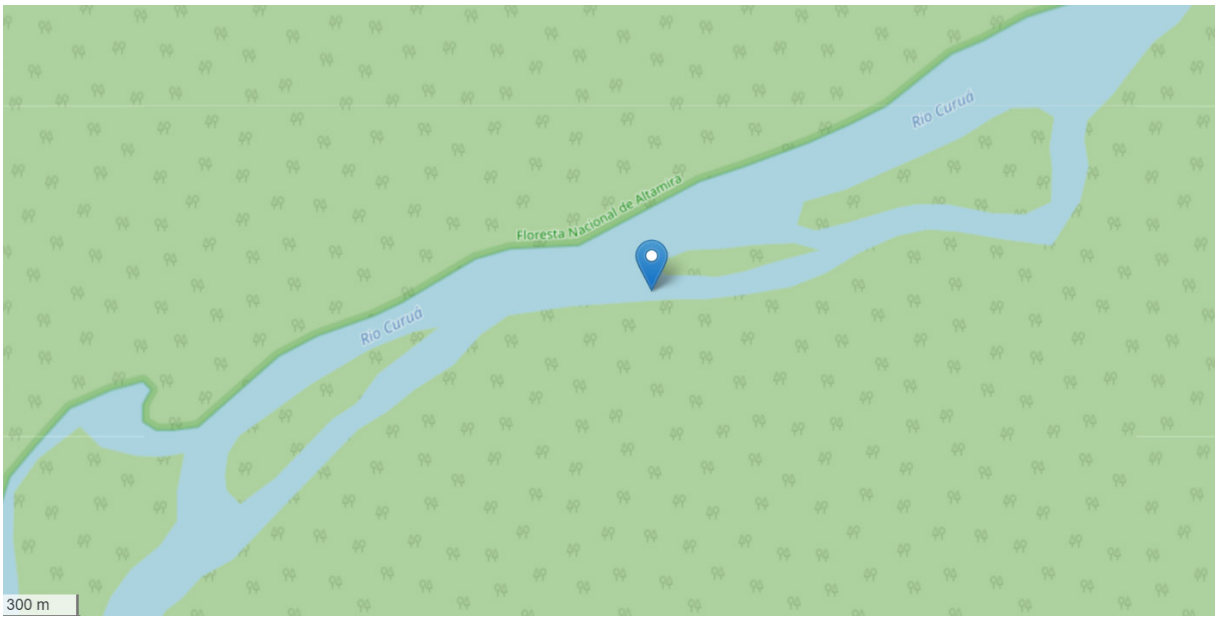


Figure 2 – Location of the place in the Curuá River, south of today's Curuaia territory. OpenStreetMap, 2024. Latitude: -6.342833; longitude: -54.684083.[7]
Source: Museu Paraense Emílio Goeldi.

Figure 3 – Detailed view of the place where the trumpet was recovered next to a small river island. OpenStreetMap, 2024. Latitude: -6.342833; longitude: -54.684083.
Source: Museu Paraense Emílio Goeldi.



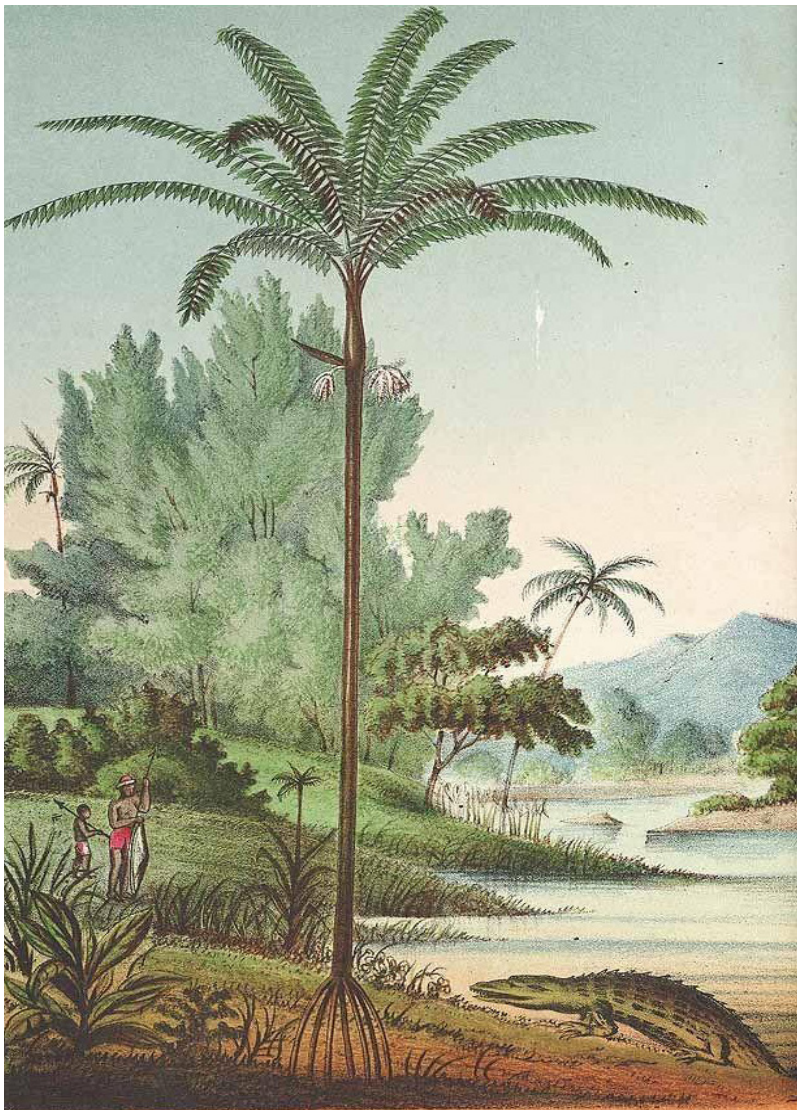


Figure 4 – Iriartea exorrhiza ('walking palm', 'Paxiúba'), lithograph printed.
Source: Seemann (1856, p. 134).

Luna 1984). Its crown is light, with feathery, pinnate leaves about 2 meters long. The tree is prevalent in the middle Xingu region, but also widespread throughout Amazonia (Balick, 1985, p. 11). The palm is known as a source for instrument building in indigenous communities. It is also the material for cylindric, end-blown trumpets in the Upper Rio Negro (Lollo; Picchia, 2021, p. 7). To date, no comparable instrument made of the same wood from this region has been identified. The aforementioned instruments made of bamboo and either gourds or animal horns are comparatively well preserved and documented, though a more in-depth study would be desirable, but side-blown trumpets like this one, made of palm wood, have not yet been investigated.

DOCUMENTATION AND MEASUREMENTS

Figure 5 shows the instrument in its entirety, with an overall length of 104 cm. Although originally crafted from a single piece of palmwood cut lengthwise into two halves, the instrument can be divided into three distinct sections: the conical bell, measuring 50.5 cm; the narrower middle section, 34 cm in length; the mouthpiece near the orifice, 12.5 cm; and the small end, 8 cm. The small end narrows toward the tip but is broken; we assume it was originally closed,

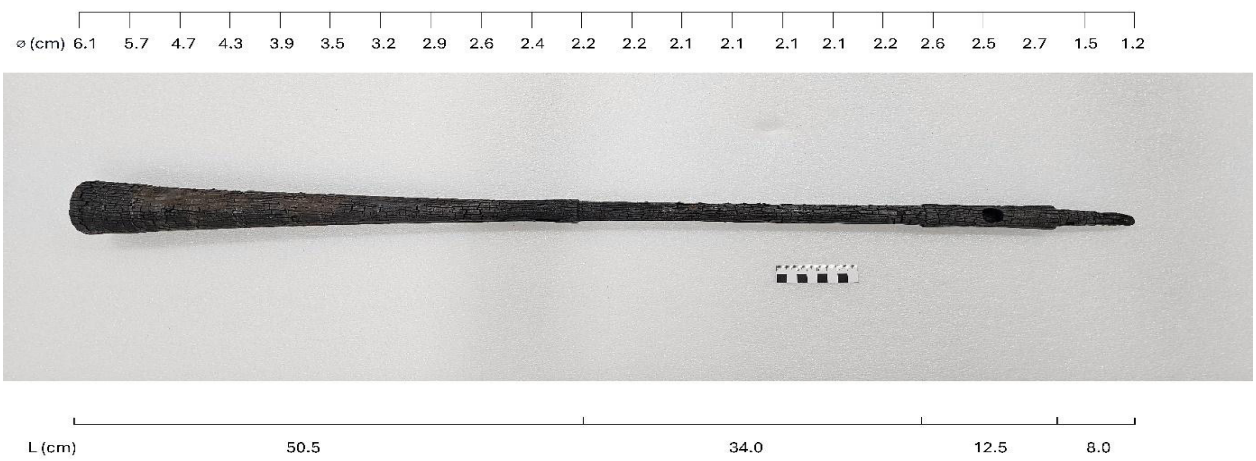


Figure 5 – Trumpet sign. 1958 in the archive of the Museu Paraense Emílio Goeldi. Above: Measurements of the diameter, in steps of 5cm from the bell. Below: Measurements of the lengths of the different sections. Photo by the authors, 2024.
Source: Museu Paraense Emílio Goeldi.

though a thin-walled fragment now leaves a small opening in the artifact. The diameter of the instrument narrows from the wider bell to the tube in the conical bell section, then remains relatively steady throughout the tube up to the area around the integrated mouthpiece (orifice), where the tube thickens.

Special attention must be given to the orifice designed for playing, as it plays a crucial role in how the player interacts with the instrument and influences the sound it produces. In Figure 6, the orifice is shown in detail, including the wall thickness. We observe that the area around the orifice—referred to here as the mouthpiece—is thicker than the tube on either side, suggesting that the maker may have intentionally reinforced this section for durability. The wall in this area is relatively thick, measuring 6 millimeters, surrounding an air column approximately 15 millimeters in diameter.

CONTEXTUALIZATION WITH OTHER SIDE-BLOWN WOODEN TRUMPETS

Because it is made of wood rather than bamboo or animal horn, it stands out among the other trumpets in the collection. This raised the hypothesis that the instrument may have been brought by a European traveler. The Xingu River was traveled by Jesuits in the 17th and 18th centuries, and in the mid-18th century, the priest Roque Hundertpfund founded a mission, establishing contact with the Xipaya, Juruna, and Curuaia (Magalhães; Magalhães 2012, p. 20). However, this theory is refuted by the sideways orifice intended for playing, as side-blown trumpets are not known in European traditions (Montagu, 2014, p. 34).[9] Furthermore, the material has been identified as native plant species.

Cross-comparisons with similar instruments from other ethnic groups, for which sound and

Figure 6 – Left: Detail of the orifice with measurements. Right: Bell with measurements of the inner diameter and the wall thickness. Photo by the authors, 2024.
Source: Museu Paraense Emílio Goeldi.

	Measurements of the orifice	
Location on the mouthpiece	Bell side: 54mm	Small end: 53mm
Diameter	Horizontal: 19mm	Vertical: 15mm
Wall thickness:	5mm	

Table 1: Measurements of the orifice.

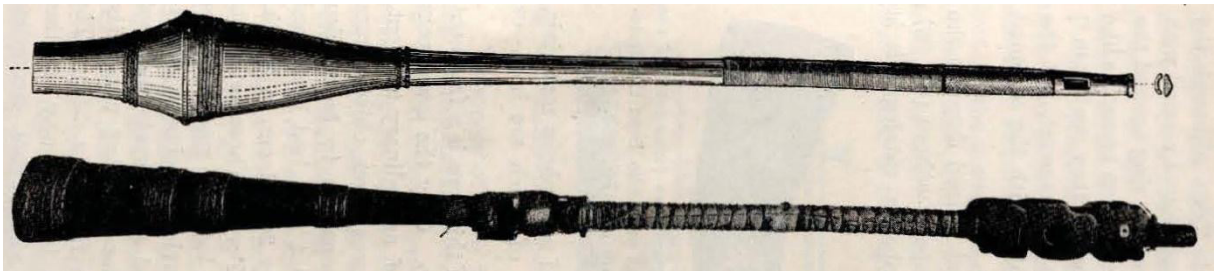


Figure 7. Wooden trumpets made of two halves.
Source: Izikowitz, 1935, p. 220.

video recordings are available, allow us to infer certain aspects of the instruments' use and performance practices. Unfortunately, no sound recording accompanies Snethlage's description of river navigation signals, but the description itself provides valuable insight into the potential use of the instruments preserved here (Snethlage, 1921). Without historical recordings, it is more challenging to understand the playing style and sound; possible sources are literary reports (Wey, 2024, p. 5).

The process of contextualization starts with the search for similar artifacts. Those would likely be conserved in museums. Although some certainly remain in private ownership, such artifacts are much more difficult to discover, as there may be no trace of their existence outside the owner's household. The comprehensive database MIMO (Musical Instruments in Museums Online)[10] offers a comprehensive section of side-blown trumpets, of which however none bear similarities with the object at hand. This speaks to the originality of the design. The closest in terms of form and mode of playing, which features a sideways orifice near the narrow end, was located in Karl Gustav Izikowitz's survey of South American instruments, which although almost a century old still is valued in current research as one of the reliable sources. Izikowitz (1935, p. 220) shows artifacts that are somewhat comparable and explains the method behind their construction: "The Indians at the River Amazonas have, however, solved this problem in an excellent way. They make their large and often very well-constructed trumpets out of two longitudinal wooden halves. The joints are covered with wax or a resin-like mixture and strengthened with a swathing of switches, bark leaves, etc. [...]. These trumpets may reach the considerable length of up to two meters" (Izikowitz, 1935, p. 220). The two trumpets that Izikowitz uses as examples are shown in Figure 7. Both are what he later refers to as 'complex' instruments.

The trumpets shown in Figure 7 are wrapped and decorated with textiles. Such decoration is missing from the specimen recovered from the riverbed, as these materials have decomposed. However, it is plausible that it was also decorated with ornaments. A cord or string was probably also used to hold the two halves together securely and tightly. The ornaments are not clearly visible in the photos. The upper of the two specimens in Figure 7 was taken from the *Handbook to the Ethnographical Collections of the British Museum* (1925, p. 287), where we find no further information. The instrument shown below is more similar to the one in the Museu Paraense Emílio Goeldi. The specimen in the lower part of Figure 7 is held in the National Museum in Copenhagen and remains there today, still in excellent condition. This is even more astonishing given that this object is around four hundred years old. Before 1710, the trumpet was transferred to the Royal Kunstkammer from the collection of the Dutch doctor Paludanus in Enkhuizen, where it already existed in 1617 (Yde, 1957, p. 212). The manuscript of Paludanus contains a description which mixes legends told at the time with material details: "six kinds of trumpets [...] the third one is of black wood and used by the Amazon women who go to war, in it is a devil, it is probably 4 shoes long" (Dam-Mikkelsen; Lundbæk, 1980, p. 20). Although we do not know the age of the River Curuá object, it is notable that similar instruments have existed over such a long period. A key similarity lies in the construction of the wooden bell, where the method of hollowing out two halves of a conical wooden shape has been used as well. Both instruments share this feature, but the Copenhagen example clearly consists of two composite parts. It is decorated with intricate carvings, both at the end where the blowing hole is located and at the junction between the cylindrical tube and the bell. The shape, combining cylindrical and conical sections, is common to both instruments.

MODE OF PLAYING AND MUSICALITY OF THE TRUMPETS

We must also be careful not to interpret the sources too rigidly when using organological terminology, as the different categories of aerophones (single reed, double reed, and labrosones) are often mixed up due to their use in comparable contexts and the fact that they are often interchanged with each other. Identification becomes important when we want

to understand the playing mode and sound of an instrument that is no longer practiced in order to ultimately reconstruct it and resocialize it among the musical traditions. The connection between player and object (instrument) is central to this, and the mode of sound production is the gateway between the two. In the case before us, the instrument was made to sound by the player's vibrating lips. For this purpose, the maker created a rounded, quasi-square orifice near the narrow end of the tube. The air, which is pushed into the tube by the vibrating lips, causes the air to vibrate.

The musical study of trumpets lacking finger holes, keys, or valves has received limited scholarly attention. Those only peripherally familiar with the instruments often dismiss them as producing "just one note." However, this misses the point. While this is true for inexperienced players, masters are able to play three to four notes. Additionally, melodic performance is not the main expression of the trumpet. More important are the quality of the sonic timbre, which carries over a far distance. Also important are various playing techniques such as articulation, bending of notes, and dynamics (louder and softer playing).

It is true that only one or at most two to four different high notes can be produced on relatively short natural trumpets.[11] The instrument, therefore, does not fall into the category of aerophones that play on scales and are often mentioned together, such as clarinets and flutes. The sonority of the object is closely linked to the process of producing the sound, which is why we need to consider its characteristics in some detail. The ability to produce more than one pitch class depends on the player's ability to overblow the instrument. To do this, the player's lips must vibrate at a frequency several times that of the fundamental tone. Since it takes more effort and practice to produce faster vibrations, the upper range is limited—a fact that brass instrument players are familiar with. One motivation for a longer trumpet construction is, therefore, to be able to produce more notes. With an instrument one meter long, you can assume at least two pitches. Nevertheless, these are not primarily to be understood as melody instruments. Wooden trumpets, as they are examined here, therefore occupy a place that is not clearly defined in music research, and are not assigned to either melody or rhythm instruments. These conditions may explain the absence of research into the music of natural trumpets in the region. We argue that the melodic properties of the music may, in this case, be secondary. The players may reach a sophisticated level of skill in playing different articulations, incorporating melodic elements by bending tones and making creative use of the differing timbre and various playing techniques. These are worth documenting further to support the learning and safeguarding of the practical knowledge of the musicians, who are often playing the horns in the context of agricultural work with animals.

The effect of trumpet sounds has been pointed out by anthropologists in relation to rituals. It is important to bear in mind that the concepts of sound and music in the Amazonian context are part of complex inter- and transdisciplinary thought systems, generally inseparable from dance, music, ritual, and spirituality (Barros, 2023, p. 97). Different aerophones are combined in rituals, for example in groups of trumpets and flutes (Piedade, 2004, p. 8), where a "complex of sacred flute" (ibid.) is composed of flutes as well as trumpets. Wind instruments are linked to practices of blowing, such as blowing smoke, and to breathing (Hill; Chaumeil, 2011, p. 20–21), which raises questions of agency and subjectivity in the relationships between humans and objects (Lolli; Picchia, 2021, p. 18). Izikowitz (1935) describes the use of bamboo (known as taboca or taquara) in simple trumpets among the Canela, Kamayurá, Parintintin, and Tucuna, the latter two with a side opening for blowing. In addition, there are many references to the use of this material in the Swedish researcher's collection when dealing with the class of complex trumpets, so classified because they are made up of two parts, a tube and a resonator, where the tube in most cases is made of taboca (Bertolin, 2022, p. 20).

While the most common and widespread use of wooden trumpets involves a single instrument used for signaling, communication, or celebration, there are also examples of multipart performances. Trumpets of varying lengths can expand the musical possibilities, allowing for

multipart compositions. In such ensembles, each player produces a distinct pitch, and possibly an octave through overblowing, which combine to create rhythmic and melodic patterns with endless potential combinations. The five-part music analyzed by Piedade (1999, p. 103) offers an illustrative example of multipart performance based on the hocket technique. This collaborative form of music-making involves interlocking intervals played by individual musicians. The hocket technique creates a complex interplay of pitch and rhythm, with the performers closely attuned and synchronized with one another. The transcription provided by Piedade (1999, p. 103) demonstrates the phenomenon that the two notes of an instrument do not have to sound exactly an octave apart but may represent a wider or narrower interval. This is due to the construction of the instruments, which does not aim to produce an exact harmonic series.

CONCLUSIONS AND FUTURE DIRECTIONS TOWARDS A MUSICAL RECREATION

Further study of existing indigenous music for similar instruments is clearly needed, both for contextualization and as a source of inspiration for future use. The approach to playing these instruments is as much an artistic endeavor as it is a scientific one. Ultimately, it remains an artistic and personal decision for contemporary players how closely they wish to connect their performance with historical sources, the playing of elders, or instruction from teachers. At this point, it is not possible to identify the ethnic origin of the trumpet. The location of the encounter is south of the territory of the Curuaia, who are known to use trumpets. However, since it was found in the depths of a river, it could just as easily have been left there by a traveler. Routes on the rivers were used for trade, and traders may have brought musical instruments. In situations such as those described by Snethlage (1921), the trumpet was used to sound the arrival of a boat in a foreign village. Such uses may explain why it had sunk into the river. We showed that the linguistic study of the terminology is an important approach to understand the variation between musical instruments and their use. This merits further investigation with members of the community. As of today, some sources indicate that there are no fluent speakers of the Curuaia language, but there are rememberers. In the urban context, the language is no longer used. But since the Curuaia live in various villages and territories, there could still be speakers in the older generation who retain knowledge of specialized vocabulary, including many musical terms.

The study of musical instruments whose tradition has been discontinued requires a discussion of the form of knowledge they entail. Various forms of musical artifacts, such as instruments, recordings, or notations, can store some of the knowledge, but many aspects cannot be stored in sound or writing. Musical notation, for example, records melodies and rhythms, along with lyrics, but provides little information about the mode of playing or singing or the timbre. Sound recordings can do this, but the context and intentions are lost. With artifacts such as musical instruments, the question of what knowledge is transported and stored by them is a very complicated one. Without additional sound recordings, they are not carriers of sound, but originators. In addition to the function, ecological components play a significant role regarding the materiality of the construction; the raw materials used in the instrument are part of the musical culture. They are accompanied by the question of the influence of ecological changes and the sustainability of production, environmental concerns, and the identification of suitable building materials, a topic that has recently been taken up by research (Hachmeyer, 2024).

Forthcoming work by the authors will address the measures to follow ethical protocols when resocializing a historical and intermittently lost instrument, in conjunction with the methods chosen for the recreation of the object. Both will form a parallel development of ethical protocols and technical protocols for the archiving and use of archived musical objects in indigenous contexts. The Curuaia and the Xipaya established the Kirinapãn Association, which represents the Curuaia who live in the city of Altamira and in the villages (Curuaia, 2024). As part of the ongoing research, the plans for the reconstruction are discussed with representatives of the

association. To our knowledge, no equivalent musical instruments are currently being made in the region of its provenance. Therefore, recreating this instrument cannot rely solely on the expertise of an expert artisan but must combine traditional knowledge with precise measurements and photographic documentation. This raises again the question of the motivation behind reconstructing the sunken trumpet and the potential new music that can be played on it. Scholars have argued that music emerged as a means of communicating emotions (see, for example, Lawson, 2014). The transformation of an inner state, spiritual sensation, or feeling into audible expression drives the invention of increasingly diverse sounds. This is a fundamental reason for the invention and development of musical instruments: they make their creators capable of communicating previously unheard sounding messages.

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Notas

1 While musical instruments may retain their shapes over long periods, they were likely reinterpreted and placed in new contexts, potentially serving different or even contrasting functions and meanings (Both, 2008, p. 6).

2 Bertolin (2022) provides a comprehensive survey of the state of research on aerophones in lowland South America which does not mention the Curuaia trumpets or other wind instruments of the Curuaia or geographically neighboring ethnicities. The extensive overview of side-blown horns by Montagu (2014) does not cover the side-blown instruments in Northern Brazil.

3 To our knowledge, there are today no fluent speakers of the Curuaia language, but some fragments remain in memory.

4 Nimuendajú uses here the word Schallcuia, a composite of the German Schall (Sound) and the Portuguese cuia, in this context a vessel made from gourd.

5 Information on a card enclosed with the object, held in the archaeological archive of the Museu Paraense Emílio Goeldi.

6 Personal communication by Raimundo dos Santos in the archaeological archive of the Museu Paraense Emílio Goeldi, 17.10.2024.

7 Geodata with kind permission by the Museu Paraense Emílio Goeldi.

8 The analysis was done on a small piece of wood that fell off the artifact.

9 The only side-blown traditional trumpet in Europe is the midwinterhoorn in the Netherlands, which bears no further resemblance to the object at hand (Montagu, 1975).

10 Available at: <https://mimo-international.com/>. Accessed on: 8 Oct. 2024.

11 We use the designation 'natural trumpet' in the sense that musicians who play the instruments are familiar with: labrosones without mechanics to alter the sound (such as holes, keys, valves).

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