Working with Flutes and Whistling Bottles from pre-Hispanic Peru

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Abstract: This article examines a four-year collaboration between Peruvian music archaeologist Gonzalo Rodríguez and German ethnomusicologist Maurice Mengel at the Ethnologisches Museum in Berlin, exploring how European museums can foster collaborative research into Peruvian musical heritage. We argue that recent decolonial perspectives in music archaeology challenge Eurocentric assumptions about musicking and necessitate experimental approaches using replicas of archaeological instruments to explore Andean musical aesthetics. These aesthetics include distinctive timbral qualities, interlocking performance practices and integrated physical movement, features that cannot be adequately studied through the observation of museum artefacts alone. Through Rodríguez's hands-on research, we demonstrate that existing museum documentation—including published catalogues and online portals—lacks sufficient detail for rigorous archaeomusicological study. His investigations have revealed approximately 260 previously unidentified whistling bottles in the Berlin collection and produced faithful replicas requiring detailed measurements, materials research, and technical expertise in instrument construction. We contend that, while online resources remain inadequate, intensive in-person study of collections is essential. Museums holding Peruvian archaeological instruments must facilitate access for South American scholars, publish more comprehensive digital documentation, including sound and video examples, and support experimental research methodologies. Such initiatives contribute to decolonization while advancing understanding of pre-Columbian musical practices and challenging longstanding assumptions.
[decolonial ethnomusicology, experimental music archaeology, Andean musical aesthetics, museum collections and repatriation, archaeological instrument reconstruction, Peruvian pre-Columbian music]

Introduction

In this article, we (Gonzalo Rodríguez and Maurice Mengel) reflect on our collaboration as respectively a Peruvian music archaeologist and a German ethnomusicologist and museum administrator. In addition to reporting some of our activities over the past four years, we focus on questions of how to create conditions which foster collaboration and what steps the Ethnologisches Museum in Berlin in particular can take to encourage more collaborative research into the history of Peruvian music. While specific to this particular museum context, we believe this case study can also serve

 10.60827/zfe/jsca.v150i2.8871

not only as material for further discussion, but also as an impetus to create or improve similar projects elsewhere.

Recent decolonial research in music archaeology questions aspects of music research and musical praxis that have long been taken for granted and that by and large privilege musicking as it is known in Europe. At the same time, newer research on Andean music has only recently found its way into archaeological research more generally and has seldom been tested with instruments in European museums. In this article, we argue that a good way to test these ideas is the experimental approach, wherein replicas of archaeological instruments are played and the sounding qualities of different instruments are experienced in practice (cf. Fang 2023). This approach will not magically tell us how exactly an instrument was played in the past, but it can keep speculations about both instruments and musical practices in check, as well as allowing us to explore and foreground modes of musicking that are considered Andean. Reflecting on our ongoing collaboration, we observe that many existing descriptions of archaeological instruments in European collections, such as in published catalogues or online portals, are not sufficient to carry out such research due to their lack of detail. Hence we argue for more hands-on research with instruments in European collections, not only by European scholars, but also by scholars from South America.

Meeting an Archaeomusicologist from Peru

When Gonzalo Rodríguez first came to the Ethnologisches Museum in Berlin in 2021, he financed his own trip and requested to see the collections of ancient flutes from Peru. At the time, he was studying flute at the conservatory in Lima. About ten years before that he had begun teaching himself how to play and how to make flutes. He also became interested in Peruvian archaeology, and particularly flutes in ancient Peru.

It is difficult to study music archaeology anywhere in the world, except perhaps on the doctoral level. Instead, one studies archaeology or music and, with luck, finds a music archaeologist as a dissertation supervisor. It is therefore not surprising that music archaeology, or archaeomusicology as Gonzalo calls it, is such a small field. What is unusual about Gonzalo is that he not only plays the flute and knows archaeology, but also makes instruments himself. This research method corresponds with a current experimental trend in music archaeology of instruments being reconstructed and then played. For example, Gonzalo reconstructed a small pan-flute from a Peruvian grave (see Figure 2). For us in the museum, it was not clear if this flute was ever played or was playable at all. Perhaps it was added to the grave for symbolic reasons only, and/or it was a toy instrument. Gonzalo's reconstruction proved that it is in fact a playable musical instrument and that its sound is perhaps even more 'potent' than expected. In spite of its size, the instrument is quite loud and could well have been used to send signals over medium distances.

Fig. 1 Gonzalo Rodríguez demonstrating one of his replicas in Berlin
Photo: Staatliche Museen zu Berlin, Ethnologisches Museum, M. Mengel

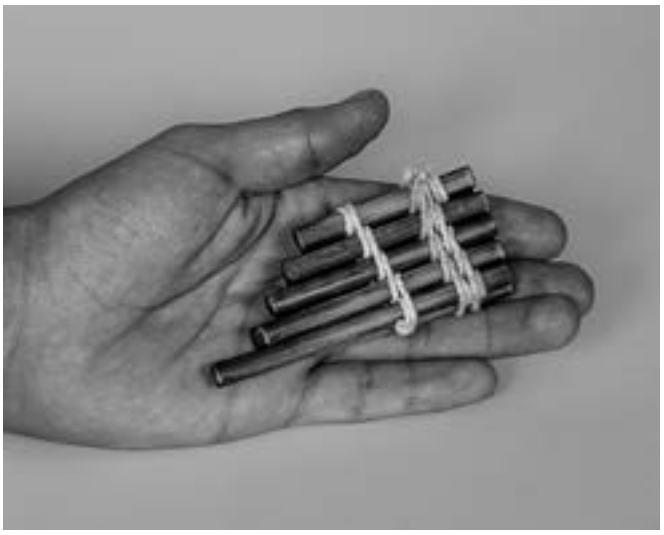

Fig. 2 Double row pan-flute, reconstruction of V A 40298
Photo: Staatliche Museen zu Berlin, Ethnologisches Museum, M. Mengel

To conduct an experimental approach in music archaeology, teams consisting of different specialists are often needed, including instrument-makers, archaeologists and musicians. Gonzalo, however, combines the necessary skills in a single person, which simplifies his research considerably.

There are only a few regions in the world where a high number of archaeological finds, including musical instruments, are also accompanied by a relatively rich set of additional sources, such as iconography or texts. Peru is one such place, where thousands of instruments have been uncovered over a long period dating roughly from the third millennium BCE (bone flutes from Caral, sometimes considered the oldest city in the Americas) to the arrival of the Spanish. Also, a plethora of additional sources (iconography, codices etc.) provides contexts for the uses of sound and music in a variety of related cultures like the Moche, Wari, Nazca, Chimu and Inca. One reason for the richness of the available material is the dry climate in parts of Peru, such as the north, south and central coast, in which even organic materials such as flutes made from bamboo or wood can survive for long periods of time. The wider Mediterranean area (Mesopotamia, Egypt, the Greco-Roman world), China and Mexico are among the few other areas with a comparable situation of rich archaeological evidence of musical instruments.

Andean Musical Aesthetics

In recent decades, Andean musicology has developed a perspective that questions traditional aspects of musicking that are sometimes taken for granted (e.g. Rivera 2010, Castro-Gómez and Grosfoguel 2007). Reviewing this research, José Pérez de Arce (2023:23–28) sees much of this newer discourse as a reaction to an older period which was dominated by a European agenda:

> Since the colonization process in South, Central, and parts of North America consisted in erasing all remains of the pre-European past, we had been taught that all 'musical' traces from past centuries were definitely lost […]. Since the second half of the 20th century, however, this idea has been questioned, and in recent years Indigenous voices have become part of the process. Decolonization has become a new position in the debate […]. Through this process [debate], we have the opportunity to revise our concepts of 'music', 'sound object' and other concepts akin to these topics in the Andean region. (Pérez 2023:24)

As an example, Pérez outlines several musical concepts or aesthetic principles that have emerged from this debate and that can be seen in both contemporary musical practices and in archaeological instruments.

Firstly, Pérez points to a different aesthetic of tone, tone quality or timbre. Present-day examples include Andean panpipes with two rows that create a beating effect due to their being tuned slightly differently. Archaeological evidence shows a similar beating phenomenon in pre-Hispanic instruments, for example, in globular flutes. A related phenomenon is the 'blowing of flutes with a strong, energetic, intense breath in

search of a complex timbre response' (ibid. 2023:26), which locally is sometimes called the 'Andean way' (ibid. 2023:27) of playing flutes, different from the European way.

Pérez also brings up the question of what constitutes a single instrument (or a single sound-producing object). For example, we can observe the widespread pattern of using two or more instruments in an interlocking fashion, i.e. multiple instruments played by multiple players producing 'a sound that seems to be played by a single flutist who does not breathe between notes' (ibid. 2023:27). If this musical practice was applied to archaeological findings, the study of individual objects might be misleading, and the necessary object of study might have to be a pair: 'if we consider the possibility of interpreting a pre-Hispanic flute as part of a more complex multiple instrument, a single instrument may no longer emerge as simple and crude, but as part of a complex sound system' (ibid. 2023:29).

Pérez also argues that the physical movement of musician and listener might have to be conceived as an integral feature of the music and performance and that the notion of time in the pre-Columbian period might have been substantially different.

If we relate the qualities that Pérez explores to the sound quality of instruments, we note that they cannot be explored by simply observing and measuring museum objects. Yet archaeological objects often cannot be played due to the risk of damage. Here the experimental approach comes into play by using replicas of archaeological objects. For example, it is helpful to hear the Andean playing style mentioned above played on a two-row pan-flute in order to discuss and perhaps even measure the effects of any second row.

The Ethnologisches Museum in Berlin includes many sound-producing objects from Peru in its collections. Currently, the museum database lists 459 instruments, both ancient and contemporary. However, this number is not complete: as we show in the next section, it does not include many objects that Gonzalo has found also produce sound. Many more instruments are held in other German and European collections. These instruments are not unknown to researchers, as they have been partly discussed in older research. But the existing descriptions, as part of published research or catalogues or the museum's current online portals,[1] are nowhere near detailed enough to allow reconstructions of them to be made. Hence, for Gonzalo to make exact replicas of museum instruments, he must visit the collections, create detailed descriptions of individual instruments with exact measurements and produce drawings of the instruments, often from multiple perspectives. To then create the replicas, he must sometimes go to great lengths to obtain the materials that would have been used in ancient Peru, such as particular species of wood or bamboo. Occasionally, he consults with experts to learn how to create specific woven patterns, as in case of *antaras* pan-flutes, which include a textile part.

1 https://recherche.smb.museum, accessed October 24, 2025.

Fig. 3 Double-row pan-flute, Gonzalo's replica of V A 44744.
Photo: Staatliche Museen zu Berlin, Ethnologisches Museum – M.Mengel

Whistling Bottles

When Gonzalo came back to Berlin for the second time, now at the invitation of the Ethnologisches Museum in Berlin, he brought with him reconstructions of flutes that he had made from his earlier observations of artefacts in the Berlin collections (as depicted above). At first he made reconstructions from wood, bamboo and bone exclusively. By his third trip to Berlin in 2024, however, he had also learned how to make instruments from clay.

During his third trip to Berlin, Gonzalo broadened his focus, looking not only at flutes, but also at the whistling bottles in the Berlin collections. Whistling bottles are sound-producing objects that typically contain multiple chambers filled with water. When moved just right, water flows from one chamber to another, displacing air so that a pipe mechanism is triggered to produce sound. Whistling bottles from Peru and Ecuador have been well known in archaeology as an important object group from the Andean region since the pioneering research by Toral Crespo (1966), but this does not mean that archaeologists understand the sounds made by whistling bottles well. In fact, these objects can produce a range of different sounds and patterns, which Gonzalo studied for some artefacts in the Berlin collection using his own replicas. The sounds produced include descending glissandi and motifs using two or three distinct pitches or tones.

By investigating broken whistling bottles, reconstructing some of them and conducting a test whereby Gonzalo inserts air from the outside to trigger the whistle, Gonzalo can determine if a vessel is indeed capable of producing sounds, and he can also gain a good idea of how it is constructed inside. Since the mechanism with the chamber and the internal whistle is typically invisible, this method produces results not unlike using X-rays to look inside vessels (Hickman 2007). In this way, Gonzalo was able to identify approximately 260 vessels in the Berlin collection as whistling bottles that up to that time had been considered simple vessels.

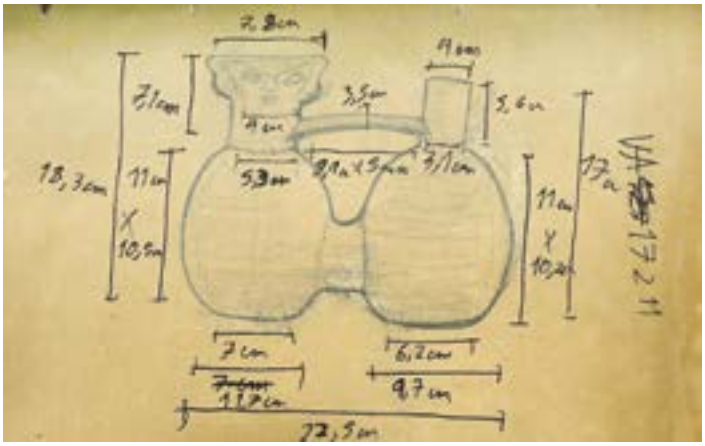

Fig. 4 Sketch of a whistling bottle
Drawing: G. Rodríguez

Outlook

Sometimes Gonzalo asks how it is that so many archaeological objects from Peru are in Germany. Generally speaking, the reason is that in the 19th century, when archaeology became an established academic discipline in Europe and other places, several Germans did pioneering work in Peru. Among them were researchers such as Max Uhde (1856–1944), then employed at what is now the Ethnologisches Museum in Berlin, and Hans Heinrich Brüning (1848–1928), who in Peru is remembered as a pioneer of archaeology in the region of Lambayeque. Through their activities, large collections of Peruvian artefacts were assembled in Germany.

As Gonzalo's story shows, it is still necessary to travel to Berlin and to other collections to study these objects intensively. Online databases are still not good enough as a sole source, since the information they provide is relatively shallow and incomplete. As mentioned above, some of the whistling bottles were only identified as such once Gonzalo was able to investigate them in person in Berlin. Likewise, with the information available in today's online catalogues, it is typically not possible to create faithful reconstructions of these instruments. Constructing faithful replicas requires an intensive investigation and more than a single photo. Traditional tools such as research papers obviously do not include examples of sound. Perhaps surprisingly, newer resources on the Internet, such as museum portals, often do not take full advantage of the medium either. Sound and video examples too are often lacking. In addition, many objects are not yet available online at all. Gonzalo emphasizes the importance of publishing collections online more comprehensively and with more detailed information, which will also help to make the collections better known in South America.

By encouraging further projects like that described here, museums can contribute to the decolonization process while also gaining valuable information about their collections. Gonzalo's visits to the Berlin collection have already given him a new perspec-

tive, especially in relation to Inca flutes. Using the experimental approach, this collection can provide new insights into the musical practices of the Inca period. While the earlier assumption that nothing of the pre-Columbian musical era remains or can be accessed today has clearly been proved wrong, much work remains before the available collections can be said to have been properly reevaluated.

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