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Communing with nature, the ancestors and the neighbors: ancient ceramic musical instruments from coastal Oaxaca, Mexico

Guy David Hepp[a], Sarah B. Barber[b] & Arthur A. Joyce[a]
[a] Department of Anthropology, University of Colorado
[b] Department of Anthropology, University of Central Florida
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Abstract

The Mesoamerican Formative period (1600 BCE–CE 250) saw the establishment of sedentism, dietary transformations and the development of ceramic technologies for subsistence, artistic representation and the region's earliest preserved musical instruments. These instruments include aerophones such as whistles, ocarinas and flutes. In this paper, we describe sixty-three ceramic aerophones from mostly Formative period contexts in coastal Oaxaca, Mexico. We situate our analysis in the broader contexts of research on music and iconography in Mesoamerican archaeology, as well as of the anthropology of sensory perception. Through a consideration of archaeological context, artifact form and technical properties, we conclude that music was used in a wide range of social settings and carried multivalent meanings in ancient coastal Oaxaca. Specifically, we argue that instruments acted in both public and private settings, and that the anthropomorphic and zoomorphic imagery they bear indicates complex social practices such as communication with revered ancestors.

Keywords

Oaxaca; Mesoamerica; Formative period; music; aerophones; sensorial anthropology.

Introduction

In recent years, the study of ancient music has promoted a growing understanding that music for past peoples was more complex in instrumentality and social significance than previously realized (Barber, Sánchez Santiago, and Olvera Sánchez 2009; Both 2002; Ishihara 2008; King and Sánchez Santiago 2011; Martí 1989; Sánchez 2007; Stockli 2007; Zhang, Xiao, and Lee 2004). This scholarship has been strengthened by ethnographic study of music, sensory

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experience and performance among non-Western populations (Feld 1991; Hanks 1990; Howes 1991a, 1991b, 1991c, 2003, 2006; Monaghan 1995; Seeger 1987). In a broad sense, this research is part of what Howes (1991c, 170; see also Classen 1993; Seeger 1987; Taussig 1993) has referred to as an 'anthropology of the senses'. In an effort to address a bias in academia and in Western society in general toward emphasizing sight over other senses, Howes (2003, xi–xiii, 2006; see also Sullivan 1986) has argued that the *interplay* among senses (or 'intersensoriality') defines how humans experience and make meaning of the world. For Howes (2003, xi, 2006), not only are senses influenced by culture, they are 'the most fundamental domain of culture expression', and thus should inform material culture studies.

In this article, we discuss a collection of ceramic aerophones recovered from mostly Formative period contexts in Oaxaca's lower Río Verde Valley (Fig. 1). We describe the instruments' physical and iconographic properties and infer the social contexts of their use based on technological attributes and provenience. We assert that a careful analysis of the form, sound and archaeological context of musical instruments can provide insight into the variability of the human sensory experience by illuminating the early development of that experience in one of the world's major non-Western cultural traditions. Our results indicate that different types of instruments contributed to the experience

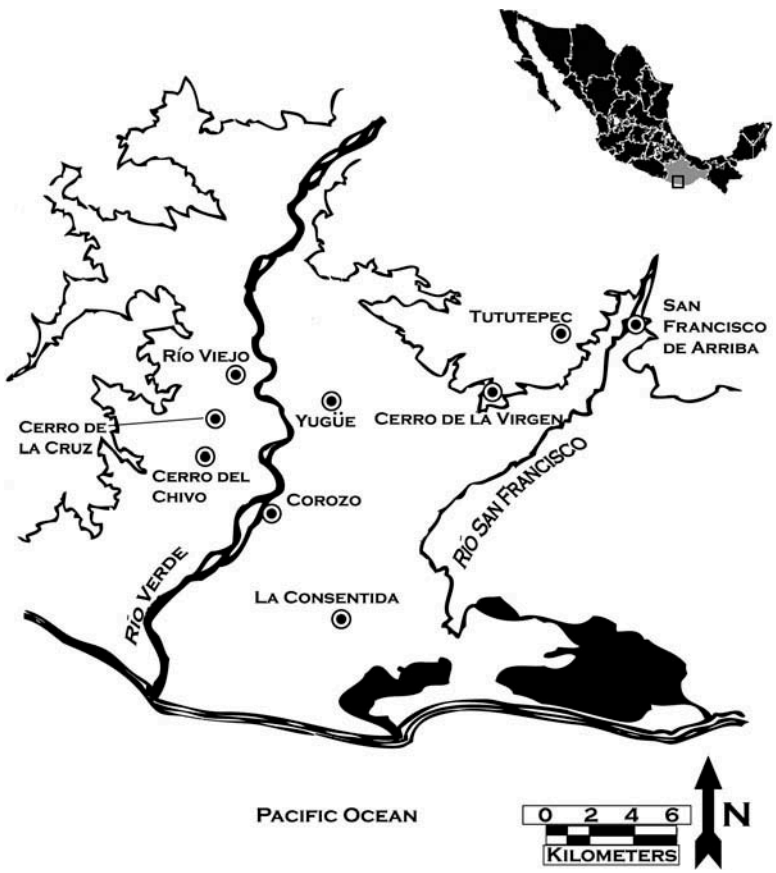

Figure 1 Lower Río Verde Valley showing sites mentioned in the text.

of daily life in ancient coastal Oaxaca, were used in both public and private contexts and sometimes became part of musicians' attire and embodied identity. We conclude that imagery depicted on instruments reflects salient aspects of cosmology in this part of pre-Columbian Mesoamerica, including music's ability to aid communication with people, ancestors, deities and natural forces.

Contextualizing music in pre-Columbian Mesoamerica

Ethnographic and ethnomusicological research has increasingly recognized variability among societies in the significance placed on different forms of sensory experience (e.g. Howes 1991a, 17–19, 1991b). 'Sensorial anthropology' of the type suggested by Howes and others (e.g. Classen 1993; Seeger 1987; Taussig 1993) has been influential for archaeologists studying Mesoamerican societies such as the ancient Maya. Houston and Taube (2000, 261), for example, suggest, as a result of iconographic and epigraphic research, that understanding the importance of Maya 'hearing, sight, and smell' is an inroad to 'reconstructing the phenomenology of ancient Mesoamericans'. These authors (Houston and Taube 2000, 263) proposed that Maya hieroglyphic writing demonstrates how the senses interacted in ancient Mesoamerica, as the texts were meant not just to be seen, but also to be read aloud in performances much like singing. This association among writing, oration, respiration and sound is supported by the interpretation that some of the earliest Mesoamerican glyphs refer to 'bodily exhalations, including breath and speech' or song (Houston and Taube 2000, 265). Though the people of the Formative period Oaxaca coast did not use a written script like that of the Classic period (CE 250–900) Maya, the musical instruments they created suggest the roots of the oratory and auditory traditions employed by later Mesoamericans (see Barber and Olvera Sánchez 2012). While we emphasize auditory and visual perception in this paper, we recognize that music formed but one aspect of the diverse sensory experiences of Mesoamerican life.

Western musical conventions can bias the study of ancient music, and ethnographic considerations of non-Western music help remind archaeologists to keep open minds regarding practices of past societies. While technological evidence of simultaneous playing of instruments indicates musical sophistication in the ancient world, for example, ethnographic studies provide analogies for inferring what such simultaneous playing might have meant. Research among the Kaluli of Papua New Guinea, for instance, demonstrates that Western notions of 'unison' are not the only way musicians may perform together (Feld 1991). Drawing their inspiration for drumming and dancing from wild birds, the Kaluli feel that group performance requires individual drums to be audible in something like a syncopated rhythm. The resulting sound emulates the 'throbbing' and 'resonant' call of the *tibodai* bird, rather than the unified notes valued in traditional Western music (Feld 1991, 87–92). This example is informative for our own research as a case study in how musical inspiration can be drawn from the natural world, and as a reminder of the variability possible within an academic category such as 'unison performance'.

Archaeological studies have also examined musical unison. In their analysis of Jiahu instruments from mortuary contexts in central China, for example, Zhang, Xiao, and Lee (2004, 777) demonstrated that ancient Chinese artisans produced increasingly sophisticated bone flutes throughout the Neolithic period. The Jiahu flutes transitioned from a four- to seven-note scale, incorporating more finger stops over time and ultimately demonstrating consistent tuning for simultaneous performance, as indicated by what is most likely a 'bone tuner' rather than a performance instrument (Zhang,

Xiao, and Lee 2004, 769, 777). As will become clear in our article, such discussions of unison performance are germane to the study of ancient Oaxacan music.

Despite advances in global music studies, non-Western instruments in museum collections and in academic accounts are too often treated as art objects, devoid of rich social involvements and of agency as animate objects (Feld 1991, 79–80; see also Gell 1998; Hodder 2012; Miller 2005; Olsen 2010). Amazonian ethnography indicates that music and song can be crucial for negotiating spatial, temporal and social relationships, and for producing and reproducing society itself (Seeger 1987, 128). For the Suyá, real acts of singing are more important than music in an abstract sense. The Suyá establish order in their world through participation in and appreciation of exhausting singing performances, which can become transformative to human consciousness in much the same way as hallucinogenic substances (Seeger 1987, 128–9). Particularly relevant for our study of ancient Mesoamerican music, the Suyá feel that songs come from animals and are central to the ambiguous divide between human and animal identities (Seeger 1987, 128–30). As authors such Viveiros de Castro (2004) and Zedeño (2008) have noted, such emphasis on the nature of human, animal and object animism is at the center of Amerindian ontologies.

Archaeological research has demonstrated that Mesoamerican artisans of the Formative period produced many small-scale depictions of people, animals and divine characters using fired clay (Faust and Halperin 2009; Hepp and Joyce 2013; Joyce 2009; Lesure 2011; Marcus 1998). Though these artifacts appeared in many forms, including as musical instruments and as vessel appliqués, the majority of related scholarship has focused on figurines. Researchers have arrived at a general consensus that figurines were intimately involved with domestic ritual (Blomster 2009; Joyce 2000a, 2009; Marcus 1998). Different studies have suggested that such ritual revolved around life history events (Cyphers Guillén 1993), ancestral contact and remembrance (Hepp and Joyce 2013; Marcus 1998) and female shamanism and midwifery (Tedlock 2005). Some have argued that Mesoamerican figurines represented idealized social roles and the negotiation of communal politics (Faust and Halperin 2009, 6; Joyce 2000a, 2009; Lesure 1999, 2011, 141, 154–5). The depiction of women more frequently than men and the proposed domesticity of figurines have suggested to some scholars (e.g., Blomster 2009; Faust and Halperin 2009; Lesure 2011; Marcus 1998) that figurines were mostly produced and used by women. As Lesure (2011, 112–15) has cautioned, however, it may be misguided to seek 'universalist' interpretations of figurines, as contextual and iconographic differences probably often reflect ancient cultural diversity rather than conflicting interpretations of the archaeological record. For example, apparently 'gender neutral' figurines from the Oaxaca coast imply unfixed identities modifiable through interchangeable accoutrements (Hepp and Joyce 2013, 271–4). The ubiquity of figurines at Mesoamerican archaeological sites indicates their use in various spatial contexts (both communal and domestic), and as part of diverse social transactions (Drennan 1976; Hepp and Joyce 2013; Lesure 2011, 126).

In Mesoamerican archaeological contexts, musical instruments are often recovered alongside figurines, and are frequently classified with figurines for analysis. Instruments have been recovered throughout Mesoamerica, but have received considerably less research than figurines (but see Barber, Sánchez Santiago and Olvera Sánchez 2009; Barber and Hepp 2012; Barber and Olvera Sánchez 2012; Both 2002; Crossley-Holland 1980; Hammond 1972a, 1972b; King and Sánchez Santiago 2011; Martí 1989; Sánchez 2007; Sánchez Santiago 2006, 2009; Stockli 2007). Half a century ago, Boilés (1966, 43–4) cited two causes of this circumstance. First, researchers face the difficulty of understanding transient aspects of music such as songs and

dances that leave scant material traces. Second, scholars and the general public suffer from erroneous presumptions that Europeans introduced key musical traditions that are actually indigenous to the Americas (e.g. Mendoza 1941). Despite what Boilés (1966) considered the systematic trivialization of Amerindian music in academia, the preponderance of available data, such as that from preserved pre-Hispanic books (or codices) and instrument iconography, indicates that music was a diverse and refined craft well before European arrival.

Several lines of evidence inform the study of ancient Mesoamerican music. Ethnohistoric accounts and modern ethnographies demonstrate the significance of music, dance, acrobatics, oration, divination and autosacrifice in the region (Joyce 2010; Monaghan 1995, 150–1, 183). From colonial texts (e.g. Both 2002, 279; Durán [c. 1588] 1994) we learn that Aztec music, for example, was 'shrill,' 'sharp' or 'high' in pitch to European sensibilities. As Boilés (1966, 44–5) argued, representations of musicians simultaneously playing multiple instruments indicate that complex practices previously thought to be Spanish introductions were actually indigenous. Such evidence can be found in figurines, in texts such as the Codex Borgia (which portrays *Xochipilli*, the Aztec god of music and dancing, playing multiple instruments simultaneously), and in instrument tuning to promote harmony and unison (Boilés 1966, 46–53; M. Miller 1988). Cues for dancers or other performers, coded into Mesoamerican music, indicate that such performances were often part of grand communal displays (Boilés 1966, 55–66, 72).

Sources such as the K'iche' Maya *Popol Vuh* demonstrate that Mesoamerican ontologies view music as having a 'divine origin', and that one of its purposes is to produce 'fanatic religious fervor' (Martí 1989, 6). Such beliefs were common to numerous cultural groups. The Aztec Toxcatl ceremony, for instance, exemplifies music's religious significance:

> The handsomest and bravest prisoner of war was selected a year before his execution. Priests taught him the manners of a ruler, and as he walked about, playing divine melodies upon his flute, he received the homage due to Tezcatlipoca himself. A month before the day of sacrifice four lovely girls, dressed as goddesses, became his companions and attended to his every want.
>
> (Vaillant [1944] 1953, 197)

After the captive's happy interval as deity impersonator, both he and his flower flutes were ritually sacrificed, again before a large audience (Both 2002, 279–80; Durán [c. 1588] 1994, 536–7; Olivier 2002; Sahagún [c. 1540–85] 1950–82, vol. 2 fig. 17, vol. 3 fig. 7). Such connections in Mesoamerica between music, nobility and the divine are integral to our own discussion of Oaxacan instruments. As we discuss below, although Formative coastal Oaxaca was a different time and place than post-Classic (CE 900–1521) central Mexico, people in these regions shared some similar beliefs about music (Barber, Sánchez Santiago, and Olvera Sánchez 2009).

Background of the collection

In Oaxaca, many archaeological studies of musical instruments (e.g. Marcus 1998; Sánchez Santiago 2006, 2009) have focused on the highlands and the Isthmus of Tehuantepec. Marcus (1998, 282) found that, while figurines are often associated with residences, instruments in Formative highland Oaxaca frequently occur in public settings. She (Marcus 1998, 281–2) noted that such instruments were worn as pendants and produced shrill, unmusical notes. On the basis

of Maya ethnography, Marcus (1998, 282) suggested that aerophones were used to issue commands audible above the din of battle or of competitive sport. We find that Formative coastal Oaxacan instruments (such as the bird aerophones in Fig. 2) suggest more varied uses, as they play a variety of both shrill and melodious sounds and are recovered from diverse contexts.

The lower Río Verde Valley is located on Oaxaca's western Pacific coast. Paleoecological evidence (Goman, Joyce, and Mueller 2013) suggests that the region was first occupied at the end of the Archaic period (7000–1600 BCE). Recent investigations at the site of La Consentida demonstrate the development of a sedentary village by the Early Formative (1600–850 BCE) (Hepp 2011; Hepp and Joyce 2013, 286–7). Regional survey and excavation, however, indicate that the region was sparsely populated until the Middle Formative (850–400 BCE) (Joyce 2010, 2013). The valley is known ethnohistorically for the Late post-Classic Mixtec empire based at Tututepec (Joyce et al. 2004; Levine 2011). Before Mixtec arrival, the area saw cycles of political centralization and destabilization focused on Río Viejo, the primary center of Terminal Formative (150 BCE–CE 250) and Late Classic (CE 500–800) polities (Barber and Joyce 2007; Joyce 2010, 2013). Before the post-Classic, the region was probably home to ancestors of modern Chatino peoples (Joyce 2010, 14, 35).

Prior studies of coastal Oaxacan instruments have considered music's role in domestic ritual at post-Classic Río Viejo (King and Sánchez Santiago 2011) and in both domestic and public settings at several Formative period sites (Barber, Sánchez Santiago and Olvera Sánchez 2009;

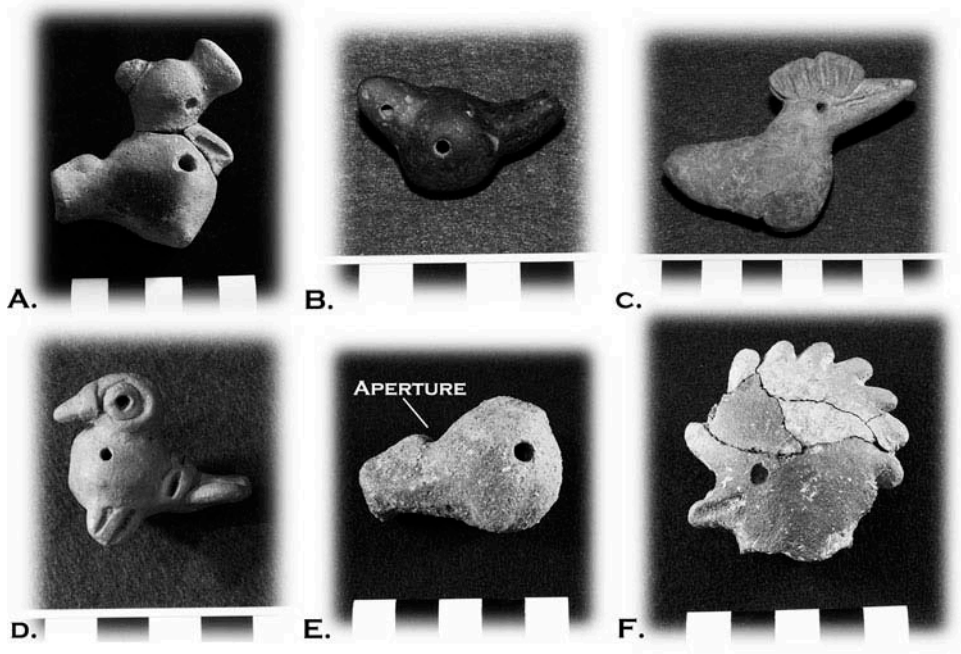

Figure 2 Bird instruments: A) Early Formative ocarina from ritual offering at La Consentida; B) probable Terminal Formative ocarina from surface at Cerro de la Cruz; C) whistle from public ceremonial midden at Yugüe; D) ocarina from elite occupational debris at Cerro de la Virgen; E) Early Formative ocarina from burial fill at La Consentida; F) Early Formative instrument fragment from burial fill at La Consentida.

Barber and Hepp 2012; Barber and Olvera Sánchez 2012). Barber and colleagues (Barber and Olvera Sánchez 2012; Barber, Sánchez Santiago and Olvera Sánchez 2009) reported on a deer femur flute, one of several burial offerings with an elite adolescent male, from the site of Yugüe's Late Terminal Formative (CE 100–250) cemetery. The exquisitely incised skeletal anthropomorph it bears suggests complex beliefs related to music and to instruments. The figure's buccal mask, which is reminiscent of the Zapotec Cociyo or Chatino Tyoo deity (Masson 2001; Urcid 2009, 30), suggests that the flute's sounds imply the forces of wind and rain (Barber and Olvera Sánchez 2012, 14, 17). References to divine winds and flowery speech associated with elites, deities, ritual and music are known from elsewhere in Mesoamerica (Houston and Taube 2000; Ishihara 2008). A preservational bias against perishable artifacts makes it almost certain that other bone, wood and reed instruments have been lost to history. Ceramic aerophones, which enjoy better preservation, must therefore be considered a biased sample of a diverse array of instruments made from various materials.

Methods and findings

Elsewhere, we have briefly reported on many of the instruments described here (Barber and Hepp 2012). In this article, we discuss these in greater detail, expand on our contextual interpretations and increase the regional dataset with the addition of twenty-one previously unrecorded artifacts from La Consentida, the oldest known site with primary cultural contexts on the Oaxaca coast. We analyzed quantitative and qualitative attributes of sixty-three complete and fragmentary ceramic aerophones from coastal Oaxaca. We began by securing as much contextual and chronological information as possible (Table 1). We categorized artifacts by instrument type (Fig. 3) and measured

Table 1 Provenience of the collection

Site	*Number of Instruments*	*Uncalibrated dates*	*Artifacts per Context*
Cerro de la Cruz	3	150 BCE – CE 500	Surface find (3)
Cerro de la Virgen	13	150 BCE – CE 250	Elite residence: Domestic fill or colluvium (4); domestic, general (4); occupational debris (5)
Cerro del Chivo	1	CE 100–250	Occupational surface (1)
Corozo	1	150 BCE – CE 100	Domestic midden (1)
La Consentida	21	1600–700 BCE	Ritual offering (1); domestic surface (3); fill (1); fill with burials (12); fill with ceramic dump (1); burial (3)
Río Viejo	12	400 BCE – CE 500	Ceremonial deposit (1); domestic midden (5); domestic fill (1); public construction fill (5)
San Francisco de Arriba	1	CE 250–500	Re-deposited ceremonial midden (1)
Yugüe	11	150 BCE – CE 250	Ceremonial midden (6); domestic midden (4); fill (1)

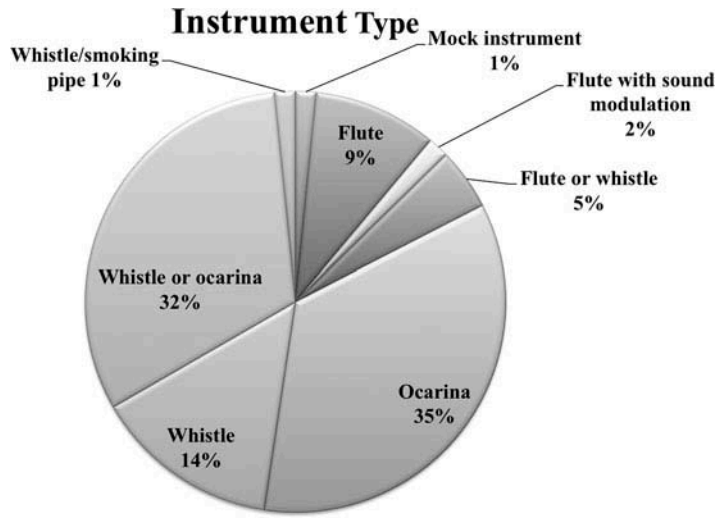

Figure 3 Instrument typology.

dimensions such as length and weight. We noted the location and dimensions of mouthpieces, apertures, finger stops, resonating chambers and holes for suspension as pendants. We used Tune!it™ software[1] to identify the lowest, highest and center notes, as well as harmonics and sound spectrums, for playable instruments. We recorded the instruments using Audacity® software. We described ceramic paste, surface treatment, firing conditions and preserved slips and paint. We photographed and drew the artifacts. Cross-section illustrations, which display the instruments' inner workings, required inference based on exterior form and interior analysis with measuring pins. We studied the instruments to infer iconographic identities including anthropomorphic, zoomorphic and hybridized forms (see Hepp 2007; Hepp and Joyce 2013). We noted diagnostic features such as traits that aid zoomorph identification and clothing and accoutrements of anthropomorphs and transformational hybrids.

The instrument collection comes mostly from Formative period deposits at the sites of Cerro de la Cruz, Cerro de la Virgen, Cerro del Chivo, Corozo, La Consentida, Río Viejo, San Francisco de Arriba and Yugüe (Fig. 1). Five artifacts are from Early Classic (CE 250–500) or mixed Formative/Classic deposits, but are included because they represent special instrument classes worthy of discussion. The span of time in question (over 2,000 years) saw significant cultural changes in Mesoamerica, including the establishment of sedentism, the rise of social complexity, the transition to agriculture and the region's first centralized polities. These instruments provide the opportunity to study music during a key historical period for which written texts are unavailable.

The collection includes whistles, ocarinas and different types of flutes (e.g. Fig. 4a and 4b). The flutes bear apertures like those of whistles and ocarinas, and are differentiated by their long, open sound tubes as opposed to spherical resonating chambers. Rare instrument types include a flute with a moving plug that modulates sound like a trombone slide (Fig. 4a), a double-tubed flute bearing probable zoomorphic imagery (Fig. 5a), a whistle that doubled as a smoking pipe (Fig. 5b), and what is apparently an unplayable emulation of an

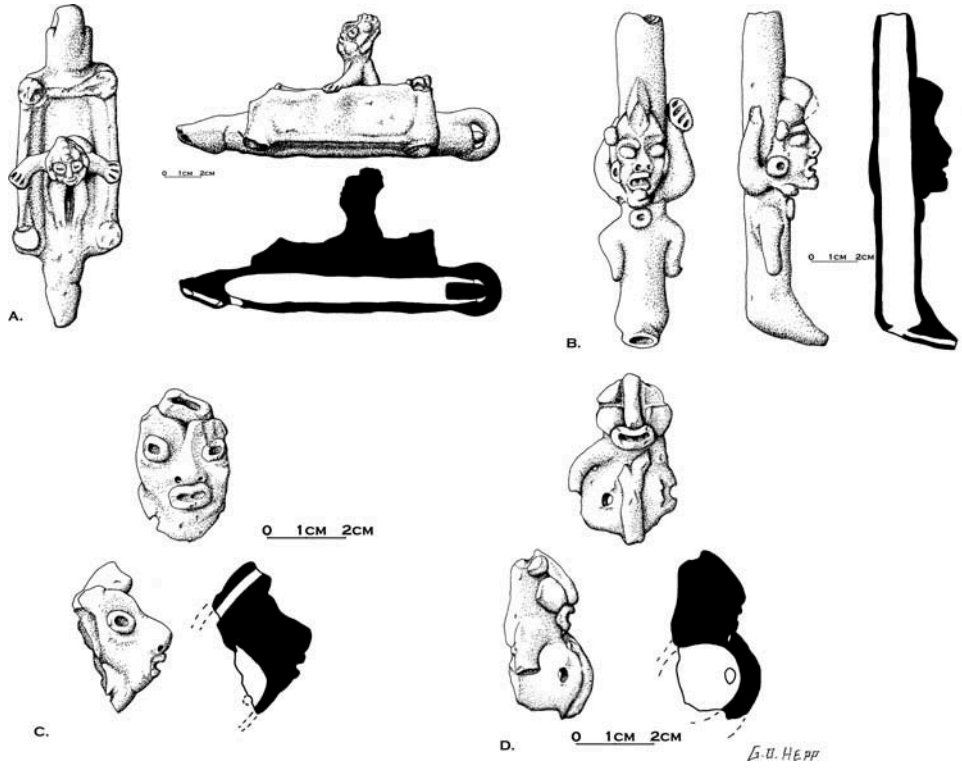

Figure 4 Anthropomorphic instruments: A) probable Early Classic flute from surface at Cerro de la Cruz; note sound-modulating plug; B) flute from elite occupational debris at Cerro de la Virgen; C) Terminal Formative ocarina from public building construction fill at Río Viejo; D) Terminal Formative ocarina from construction fill at Río Viejo.

instrument, perhaps made by a child. Suspension holes, which do not affect sound production, suggest that musicians wore some instruments as pendants. Twenty-four instruments are sufficiently preserved to determine whether they were pendants, and fourteen of these (58 per cent) were.

The instrument iconography represents humans (Fig. 4), animals (Fig. 5a–5c), and 'transformational' hybrids combining anthropomorphic and zoomorphic elements such as human clothing or jewelry worn by animals (Fig. 5d). Zoomorphs include canids (Fig. 5c), opossums (Fig. 5d), an iguana, an armadillo or turtle and numerous birds (Fig. 2). Human figures include realistic depictions of elites wearing capes, headdresses and ear spools (cf. Carballo 2009; Joyce 2000b, 2002; Stross 1994). One flute even depicts a seated noble transported in a palanquin (Fig. 4a). Other anthropomorphs represent generic characters without individualized faces (Fig. 4d). Fig. 6a indicates the variety of identities represented when probable and definite examples are combined. Fig. 6b presents basic identity categories when different types of animals are combined. Zoomorphs represent the largest identity category, and birds are most frequently depicted. Rare transformationals probably suggest powerful ritual specialists becoming or embodying animals, as discussed below (Hepp and Joyce 2013).

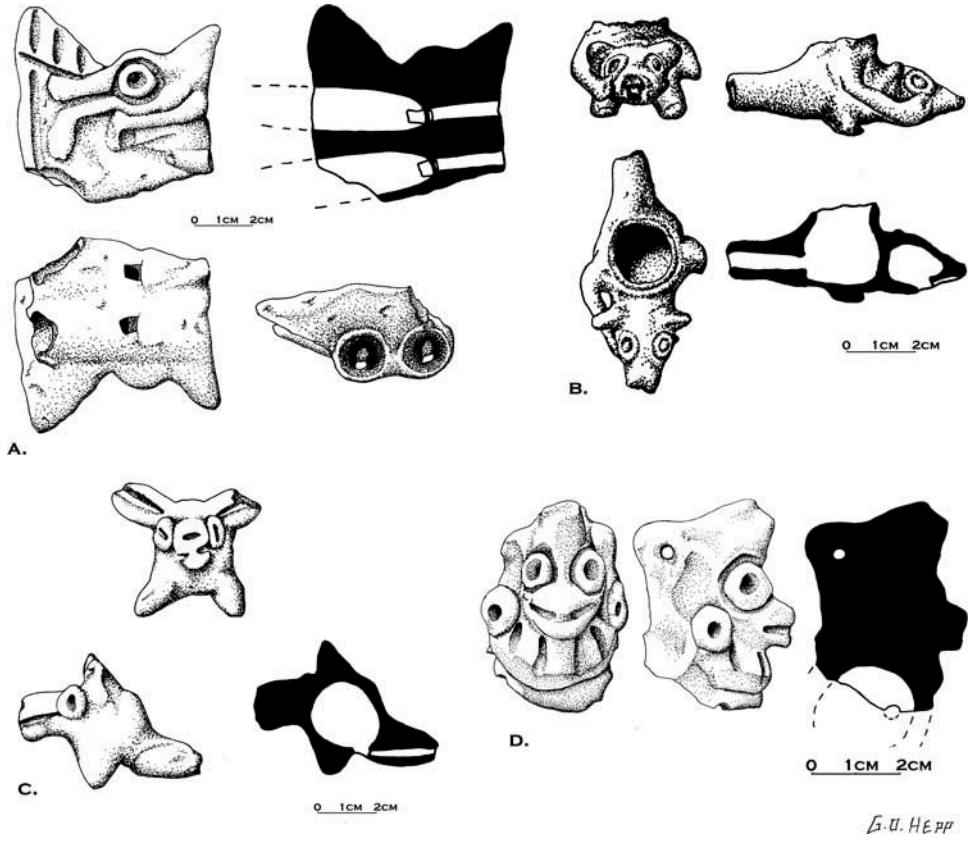

Figure 5 Zoomorphic and transformational instruments: A) dual-tubed flute from domestic midden at Corozo; B) whistle/pipe from possible Early Classic re-deposited ceremonial midden at San Francisco de Arriba; head is whistle, body is smoking pipe; C) probable Terminal Formative canid whistle from surface at Cerro de la Cruz; D) transformational ocarina from public building fill at Yugüe; note animal facial features and human jewelry.

Some of the twenty-one playable instruments are broken in ways that may alter their sound relative to its original quality, but most are only superficially damaged. Though it is difficult to reconstruct the conventions governing the use of these instruments, we can discuss patterns present in their lowest, middle and highest playable notes. Some instruments produce light, melodious sounds when blown softly and positively ear-splitting pitches when played forcefully. Even instruments without finger stops or sliding plugs are capable of various sounds. For example, though a simple blow on a whistle may tend to produce a certain note, subtle changes in the player's embouchure or in air velocity may produce others. While frustrating for the researcher, the diverse sounds emitted by even the 'simplest' instruments suggest that ancient coastal Oaxacan music was a complex and expressive medium of communication, ritual and artistry.

Fig. 7 summarizes the instruments' lowest, middle and highest playable notes. Obvious patterns include the dominance of the sixth and seventh octaves among all sounds, the importance of B♭5 among lowest notes, the prevalence of B6 among mid-range notes and

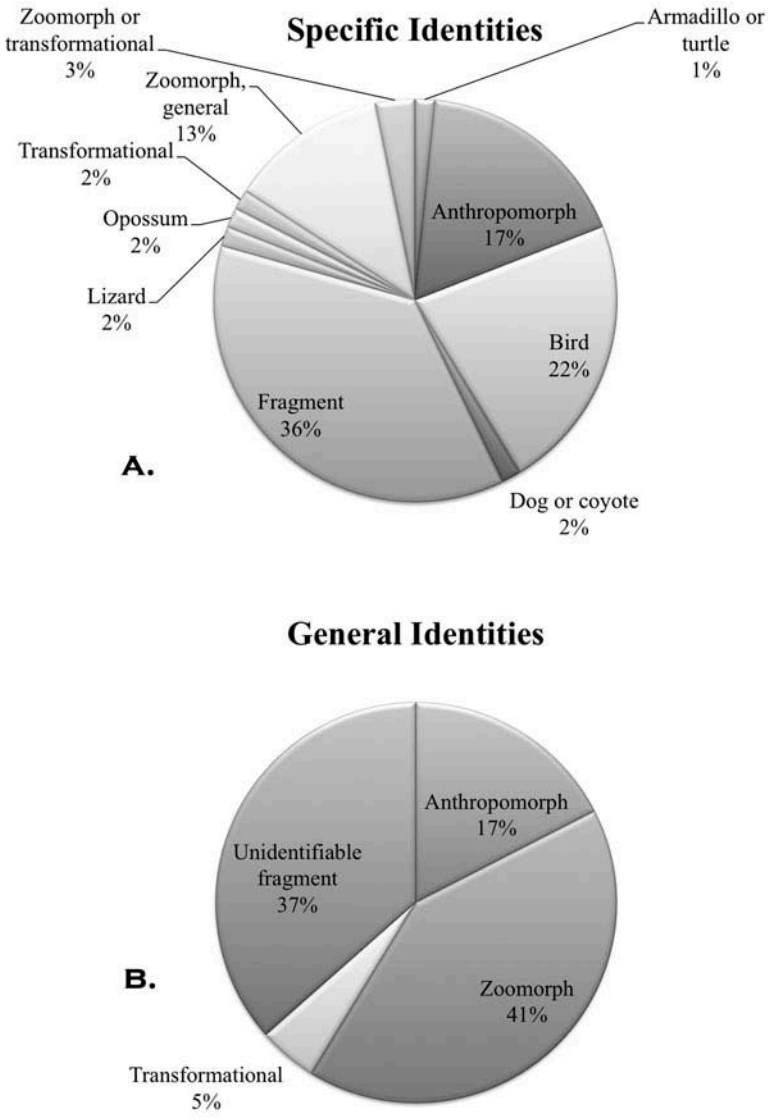

Figure 6 Identity categories of instruments: A) specific identities; B) general identities.

the prominence of G6 among high notes. Though one flute (Fig. 5a) plays a piercing D♭8, its broken tubes may affect its sound. The collection also contains instruments of considerable variety. From lowest to highest notes (B♭5 to G7, disregarding the aforementioned broken flute), the instruments play nearly three full octaves, indicating the wide variety of sounds at musicians' disposal. The common notes suggest established musical conventions and the use of instruments in unison performances. Having summarized the data produced by our analysis, we will now discuss how this evidence informs the study of music's social role in ancient coastal Oaxaca.

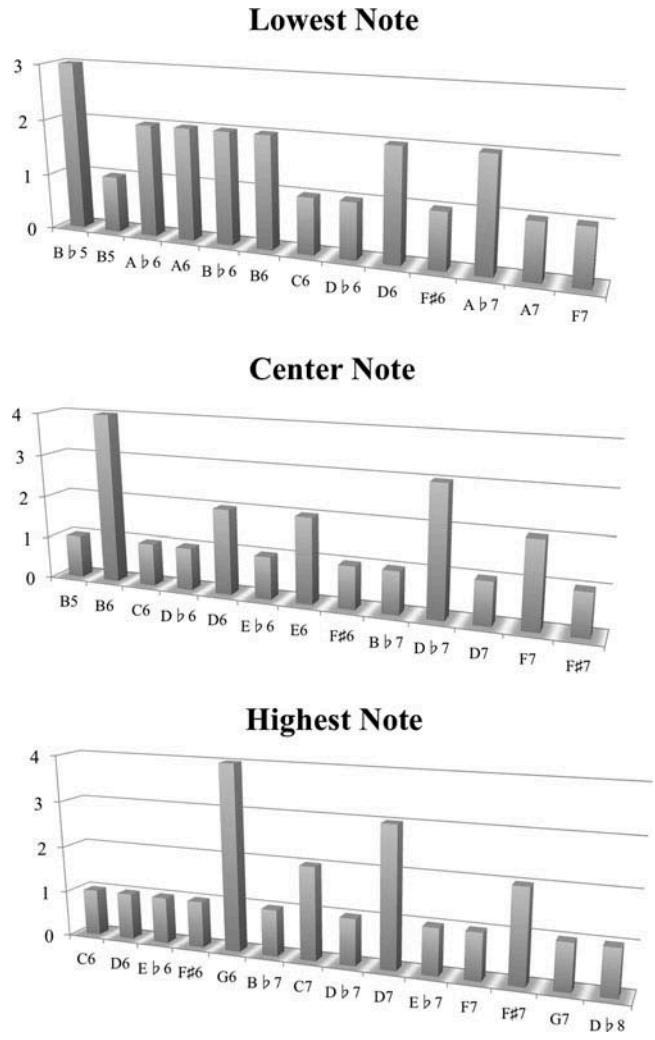

Figure 7 Frequency of lowest, middle and highest playable notes. Y-axis indicates number of instruments playing each note.

Discussion

Patterns in artifact form, provenience and playable notes of the coastal Oaxacan aerophones permit inferences about the social milieus of ancient music. Taken together, iconographic and ethnohistorical evidence for simultaneous performance with multiple instruments, the presence of many instruments in public contexts and instrument tuning consistencies suggest performance by bands and in public settings (but see Feld 1991 regarding non-Western concepts of unison). The fact that some instruments were pendants suggests that musicianship was an aspect of identity sometimes publicly displayed through one's attire (Joyce 2005). This finding provides an example of the multisensory nature of ancient coastal Oaxacan music, as instruments forming part of one's costume imply tactility and visual relevance as well as sound. *Seeing* and *feeling*

the artifacts were thus significant, if perhaps secondary, aspects of fully appreciating them (see Howes 2006). Such interplay of the senses is also demonstrated by the recovery of some instruments from middens (Table 1), suggesting that the taste and consumption of feasting foods interacted with the sounds, sights and textures of music in this part of Mesoamerica.

In addition to their discovery in public settings, the iconography of the instruments also implies that some music was public. Many zoomorphs were constructed with tails as mouthpieces, torsos as resonating chambers, and heads facing outward. This pattern suggests musicians could emulate or even 'become' birds (for example) by 'speaking' to an audience in melodious, bird-like tones (Barber and Hepp 2012). Through such mimetic acts, people symbolically harness the power of creatures, persons or spiritual forces for their own needs (see Benjamin and Tarnowski [1933] 1979, 65; Meskell 2005; Nakamura 2005; Taussig 1993, xiii, 7, 51–2, 105). When one considers that, for Classic period Oaxacan Zapotecs, dogs were companions to the land of the dead and birds were messengers between realms of existence (Marcus 1998; Urcid 2005, 41–2, 62–3), it seems probable that zoomorphic instruments allowed musicians and auditors to see the world from the perspective of these cosmically significant animals (Viveiros de Castro 2004). Such transformations probably facilitated communication among people, deities, ancestors and natural forces (Barber and Olvera Sánchez 2012). Similarly, transformationals probably refer to nagualistic beliefs regarding the ability of ritual specialists to connect with, take the form of or share the essence of non-human beings (see Foster 1944; Gutiérrez and Pye 2010; Hepp and Joyce 2013; Kaplan 1956; Sahagún [c. 1540–85] 1950–82). Ethnographic research emphasizes the significance of music in the negotiation of human and animal identities in native Amerindian ontologies. For the Amazonian Suyá, for instance, music aids in the mediation of the tenuous and sometimes dangerous distinctions between humans and animals as social agents (Seeger 1987, 60–3, 128, 132). Based on the high percentage of zoomorphic instruments in the collection, our research indicates that music held a similar role in ancient coastal Oaxaca.

Aerophones in general call to mind Mesoamerican cosmological associations between divine wind, breath, and oration (see Barber and Olvera Sánchez 2012; Houston and Taube 2000; Ishihara 2008). Schele and Freidel (1990, 69) have discussed the associations for the Maya between smoke, the vision serpent and communication with ancestors. Beliefs similar to these may have been at work in ancient Oaxaca. Specifically, sounds and smoke (such as that from votive offerings or tobacco pipes) that travel skyward may have been modes of divine communication. In the coastal Oaxacan collection, the combination of a zoomorphic musical instrument and a smoking pipe in a single artifact (Fig. 5b) seems a particularly potent example of how such beliefs about divine communication could be captured in material form. The high-pitched whistling sounds (from A♭7 to F♯7) produced by this instrument, as well as the smell and taste of the tobacco smoked in it, would have made for a rich sensory experience. The discard of this artifact in a re-deposited ceremonial midden further indicates its ritual significance.

While some instruments imply public performance, others suggest intimate occasions. Several examples (Fig. 4a–4c) bear anthropomorphs facing *toward* the player, rather than away. This is true of both 'generic' representations (which may refer broadly to 'ancestors', 'nobles' or 'musicians'), and of individualized anthropomorphs, which could represent specific people, deities or ancestors. If outward-facing zoomorphs allowed musicians to communicate as animals, then perhaps instruments carried a form of social agency and were viewed as animate

beings (Barber and Olvera Sánchez 2012; Gosden and Marshall 1999; Meskell 2005; Viveiros de Castro 2004). If anthropomorphic instruments were also social agents, playing them may have permitted communication with the instrument or with the being the instrument invoked (Barber and Hepp 2012). Rather than requiring exuberant public events, such 'conversations' could be private moments involving only musician and instrument. The sensations associated with such acts (which may have been quiet and enclosed) would have been very different from those experienced during public events.

The depositional context of the anthropomorphic instruments also implies seclusion. Only two of eleven anthropomorphs came from public contexts, while six were from domestic areas. Only three of these artifacts were obviously pendants, suggesting anthropomorphs were rarely worn. The fact that four of the six domestic anthropomorphs come from an elite residence suggests status differences related to music, perhaps indicating ideological complexities such as differential ancestor contact legitimating status differences among the living. Archaeologists working elsewhere in Formative Mesoamerica (see Carballo 2009; Grove and Gillespie 2002) have discussed domestic artifact distribution as evidence for dissimilar ritual practices in households of different status. Communication with ancestors has been proposed for Formative period figurine use (e.g. Hepp and Joyce 2013; Lesure 2011; Marcus 1998). The context and form of anthropomorphic instruments support such an interpretation because the instruments are found in domestic settings, precisely where intergenerational contact between living people (such as between children and their grandparents, who might be seen as 'ancestors in training') would occur, and because the orientation of the anthropomorphs suggests intimate, small-scale social actions.

Temporal patterns in figurine iconography have been a focus of previous research in coastal Oaxaca (Hepp 2007; Hepp and Joyce 2013; Hepp and Rieger 2014). These studies indicate that figurines were stylistically simple in the Early Formative, when most examples were anthropomorphs bearing few accoutrements and little clothing. Later figurines demonstrate a broader range of styles, with increasing numbers of zoomorphs and transformationals. Though anthropomorphs remained important, they became more complex, bearing elaborate clothing, hairstyles and body modifications such as tattooing and jewelry (Hepp and Rieger 2014). With a limited Early and Middle Formative period instrument collection, all of which comes from La Consentida, it is difficult to determine whether a similar diversification occurred among instruments. Of the twenty-one portions of instruments recovered at La Consentida, all eight identifiable examples represent birds (Fig. 2; Hepp and Joyce 2013). These instruments were found near burials, on a domestic surface and in or near a ritual cache containing reptile remains and a shark tooth. The two most complete La Consentida aerophones bear topside apertures. These apertures are similar to those of Early Formative Tierras Largas phase aerophones from the Oaxaca Valley (Ramírez Urrea 1993, 143) and are distinct from the bottom-positioned apertures on later coastal instruments (Barber, Sánchez Santiago, and Olvera Sánchez 2009). None of the La Consentida examples appears to be a pendant. The iconography of the La Consentida instruments emphasizes the deep history of music and avian imagery in the region. The sophistication of the mouth pieces, apertures, finger stops and resonating chambers of these earliest instruments suggests conventions much older than the Formative, possibly including Archaic period instruments made of perishable materials.

Because the collection we analyzed contains whistles, ocarinas and diverse flutes, which collectively play nearly three octaves of notes, we argue that this musical tradition encompassed a wide variety of sounds, more than would be necessary for merely communicating during battle or sport. Such sophisticated instrumentality implies the significance of music as a form of expression. The complex anthropomorphic and zoomorphic iconography of the instruments indicates that music was symbolically rich. In particular, canid, anthropomorph and especially bird imagery (along with artifact context in public and ritual settings) implies the use of instruments in contacting otherworldly entities such as ancestors. The pendant holes on some (especially zoomorphic) instruments, their absence on others (particularly anthropomorphs) and diverse public and domestic contexts at eight sites suggest great variety in the social venues of music. These results imply the need for a broad definition of what music meant to ancient coastal Oaxacans. The pattern that many zoomorphs faced *away* from musicians while some anthropomorphs faced *toward* them suggests that music could have been part of public performances or intimate occasions in which the instrument became the audience. The common thread between these disparate contexts may be that of instruments as social agents and/or as animate beings, capable of communicating with large audiences, divine forces or individual musicians (see Barber and Olvera Sánchez 2012; Gosden and Marshall 1999; Meskell 2005; Viveiros de Castro 2004). This interpretation, too, underscores the great variety in the imagery, social contexts and cosmological significance of ancient coastal Oaxacan music.

In this paper, we have attempted to explore the diverse social contexts in which musical performance occurred in a specific ancient New World setting. While we cannot recreate those performances with the detail allowed by ethnography (e.g. Feld 1991; Hanks 1990; Monaghan 1995; Seeger 1987), we have demonstrated that an analysis combining archaeological context, physical attributes of artifacts and sonorous capacities provides a starting point for examining the ways that music was enmeshed in past social life. For ancient coastal Oaxacans, there were specific times and places (e.g. public and private settings, feasts and moments of divine communication) for musical performance using particular instruments. The experiences of music for these early Mesoamericans were melded with other sounds, sights, textures, smells and tastes in a multi-sensory tapestry of daily life.

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Guy David Hepp
Department of Anthropology, University of Colorado
heppg@colorado.edu

Sarah B. Barber
Department of Anthropology, University of Central Florida
sarah.barber@ucf.edu

Arthur A. Joyce
Department of Anthropology, University of Colorado
arthur.joyce@colorado.edu

Note

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Guy David Hepp is a PhD candidate at the University of Colorado, Boulder. His research interests include the study of early village life and the analysis and illustration of ancient ceramic figurines and musical instruments. His dissertation investigates some of Mesoamerica's earliest ceramics, earthen architecture and glimmers of social complexity at the initial Early Formative (1900–1500 BCE) village of La Consentida in coastal Oaxaca, Mexico.

Sarah B. Barber is an Associate Professor of Anthropology at the University of Central Florida, in Orlando. She received her PhD from the University of Colorado at Boulder. Her research on the Pacific coast of Oaxaca, Mexico, examines the origins, organization and collapse of early complex societies, as well as the role of long-distance exchange in generating social change. She has published several articles on the ancient music and musical instruments of Mesoamerica.

Arthur A. Joyce is Professor of Anthropology at the University of Colorado, Boulder. Since 1986, he has conducted interdisciplinary research in Oaxaca on issues of power, political dynamics, landscape and ecology. He is author of *Mixtecs, Zapotecs, and Chatinos: Ancient Peoples of Southern Mexico* (2010) and editor of *Polity and Ecology in Formative Period Coastal Oaxaca* (2013). He has held research fellowships from the American Museum of Natural History, Dumbarton Oaks, and the American Council of Learned Societies.