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Music Archaeology of the Americas

Mundo Florido
Arqueomusicología de las Américas

vol. 2

Edited by / Editado por
Matthias Stöckli & Arnd Adje Both

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General Editor / Editor general
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Staging Sound
Acoustic Reflections on Inca Music, Architecture and Performance Spaces*

Henry Stobart

This study explores connections between Inca musical performance practices and acoustic spaces. Drawing on historical sources, and informed by contemporary ethnographic perspectives, it considers a variety of Inca performance contexts. As a starting point it examines the large *ushnu* platforms that were built by the Incas in several parts of the empire, arguing that rather than acting as "stages" for musical performance per se, such monuments probably served as important foci for ceremonial activity, involving participatory music and dance. The existence of outside and inside music making is then considered, with various examples examined to raise questions about how Inca musical sonorities were adapted to particular acoustic environments. In turn, it is speculated whether the Incas developed an elite chamber music culture – adapted to resonant interior spaces – comparable to that of, for example, medieval Europe.

El presente estudio investiga las relaciones entre las prácticas musicales inca y los espacios acústicos en los que éstas solían realizarse. Basándose en fuentes históricas y aplicando perspectivas etnográficas contemporáneas el estudio cubre una variedad de contextos musicales. Como punto de partida sirven las grandes plataformas *ushnu*, construidas por los inca en varias partes de su imperio, al respecto de las cuales se argumenta que más que "escenarios" para la ejecución musical en sí tales monumentos representaban probablemente centros importantes para la realización de ceremonias, incluyendo prácticas musicales y danzarias de carácter comunitario. Luego se toma en consideración la existencia de actividades musicales llevadas a cabo tanto fuera como dentro de espacios cerrados. A partir de diversos ejemplos se plantean preguntas acerca de cómo las sonoridades musicales inca se adaptaron a ambientes acústicos particulares. También se pone a especular si los inca hayan desarrollado una cultura élite de música de cámara – adaptada a espacios cerrados resonantes – comparable, por ejemplo, a la de la Europa medieval.

It is hard to believe that the Incas would have been indifferent to the sonic implications of resonant spaces. As music makers the world over are aware, reverberant spaces and reflective surfaces amplify and extend the life of sounds and increase the distances over which they can be transmitted. For the performer, resonance can often provide a sense of effortlessness, empowerment and even transcendence, as the sound of his or her voice or instrument is reinforced, intensified and offered additional timbral and expressive affordances. Yet, while reverberation can, in some contexts, be intensely appreciated and critical to the transmission and aesthetics of music, in others it may disrupt, distort and delay the communication of sound, leading listen-

* This paper was originally written for and appears in the volume *Inca Sacred Space: Landscape, Site and Symbol in the Andes* (Frank Meddens, Katie Willis, Colin McEwan, and Nicholas Branch, eds.). London: Archetype (forthc.). The author is grateful to the editors and to Archetype for permission to publish a revised version in the current volume.

ers to feel overwhelmed, confused, or disturbed by the resulting noise. Similarly, excessive reverberation can impair the effective communication of speech, or clarity of articulation in music. In short, we are highly sensitive to acoustic space and our forms of sonic expression tend to adapt or develop, more or less consciously, in relation to the properties of particular spaces.

We sometimes appreciate or select a particular space for its acoustic properties, and acousticians may even design spaces, such as concert halls or theatres, with particular acoustic properties in mind. However, from a more historical perspective, musical styles and practices can often be seen to have adapted to spaces which were not originally constructed or selected with acoustic properties in mind. For example, Blesser and Salter (2007: 90) suggest that the high acoustic reverberation characteristic of many early European cathedrals and churches was an unintentional consequence of a range of religious, philosophical and social forces. Church walls were initially built for protection against weather, to provide a separate space, and to assert political power, rather than with acoustics in mind (*ibid.*). Similarly, the hard, acoustically reflective surfaces provided by the cut stone walls of such buildings were simply a by-product of developments in building technology and the desire for durability. Yet, musicians adapted to the acoustic properties of these spaces and ultimately this "determined the acoustic scope and nature of [European] liturgical music" (*ibid.*, 91). We might wonder whether, on similar lines, acoustic properties were incidental to most Inca building and city planning projects. If so, how did people adapt their musical and other sonic performance practices to the acoustic properties of the resulting built environments? In what ways might Inca architecture and living patterns have influenced the nature of their music?

My approach here, then, is principally to explore how the Incas might have adapted their sonic practices – especially music – to their built and natural environments. I am less concerned with seeking out (or assuming) acoustic intentionality in architectural planning or the construction of other performance spaces. Nonetheless, I do not entirely rule out the possibility that acoustics may sometimes have been taken into consideration in Inca building design; after all, acoustic intentionality was undoubtedly fundamental to musical instrument design and construction. The thorny problem of "acoustic intentionality" loomed large in several chapters in Scarre and Lawson's pioneering volume *Archaeoacoustics* (2006), as for example in Aaron Watson's essay "(Un)intentional Sound?". Here, he observes that "archaeology may be constraining its scope for interpretation by insisting that the intentions underlying the use of a place or artifact have to be empirically demonstrated" (Watson 2006: 20).[1] Although the historical and material evidence of Inca musical practices are comparatively rich, especially compared to the Neolithic examples discussed by Watson, fundamental questions nonetheless remain about how Inca music sounded and related to the acoustic spaces in which it was performed. Yet, despite these limitations in evidence, one aim of this essay is to encourage scholars to consider the impact of acoustic space on pre-Hispanic musical performance practices. To date, research into the music of pre-Hispanic Andean or Peruvian coastal cultures has tended to stress the soundmaking objects themselves, with less consideration of their interaction with the acoustic spaces in which they would have been sounded.[2] (For a recent exception, see Kolar *et al.* 2012). In this essay I argue that the practices and aesthetics of Inca music and other sound making practices would have been contingent on the acoustic spaces and contexts in which they were performed. Accordingly, an appreciation of acoustic space may be seen as an important facet of any serious study of the sonic affordances of archeological sound-making artifacts, such as musical instruments.

In the first section of this paper, I examine the acoustic properties of *ushnu* platforms and the potential they afford for musical performance.

1 This would seem to chime with the approach of Abel *et al.* (2008) who have conducted acoustical research at Chavín de Huántar, near Huaraz in Peru. This research group initially examined the acoustic affordances of particular spaces, but their more recent work has also explored the potential of acoustic intention in site design at Chavín (see Kolar *et al.* 2012).

2 For overviews of the study of ancient Peruvian (and certain other South American) musical instruments and their sound production see Dale Olsen's *The Music of El Dorado* (2002) and César Bolaños' *Origen de la música en los Andes* (2007).

The term *ushnu* has a number of meanings, but here I focus on the pyramidal structures, consisting of several terraced platforms that were built in various parts of the Inca Empire, serving as ceremonial centres linked with the Inca state (Meddens *et al.*, forthcoming). In essence I argue that larger monumental *ushnu* platforms were unlikely to have been built with sound in mind, nor tend to be especially effective stages for acoustic communication. However, the environs of *ushnu* (in their various forms) were undoubtedly important foci for festive music and dance. It is suggested that in a few specific cases the placement of platforms in relation to other features of the landscape (whether or not intentional) may have enhanced acoustic transmission, raising the possibility that certain *ushnu* might have been recognized for their acoustic properties. This specific focus on *ushnus* is followed by revisiting and critically examining what is perhaps the most famous and widely circulated account of Inca musical acoustics. From this example, questions emerge about the musical relevance for the Incas of a distinction between indoor and open-air musical performance. In an attempt to explore the acoustic nature of Inca music, I examine some of the characteristics of Inca architecture and life style, and speculate how these might have related to musical performance practices. This discussion, alongside the paucity of accounts of Inca chamber music, leads me to identify an apparent preponderance for open air performance. I explore this in more detail in the final section, with special reference to Cusco's main plaza, Haucaypata, speculating about what such a possible preference for open-air performance might mean as regards the nature, aesthetics and practices of Inca musical performance. Several of my approaches are informed by extensive ethnographic research in a highland rural community of Northern Potosí, Bolivia (Stobart 2006b).

The *Ushnu* Platform: Seen and Not Heard?

I wish to suggest that acoustic considerations were unlikely to have been a significant priority for Inca or provincial architects when they set about constructing or ordering the construction of large *ushnu* platforms around the empire.[3] Indeed, we might wonder how often they were even considered. Rather, what was likely to be of importance to planners was the monumentality of such platforms as durable statements of imperial power and their role as stages for the periodic performance of such power. This monumentality is especially notable for the case of the large *ushnu* platform at Vicashuaman (Ayacucho, Peru), an important Inca administrative centre (Fig. 1a-b). Ascending an *ushnu* platform in particular ritual or ceremonial contexts, to assume

Fig. 1a-b The large monumental ushnu at Vilcashuaman (Ayacucho, Peru), a major Inca administrative centre, located on a key Inca road. Photos by Frank Meddens.

3 The term *ushnu* is often more strictly connected with a sink-like construction, into which liquid offerings were made, rather than to a platform. Nonetheless, a number of drawings from the early colonial period depict the Inca seated on a platform structure labelled *usno* (*ushnu*). For example, Guaman Poma (1980 [c. 1615]: 370 [398]) who writes on the base of the platform "trono y aciento del Ynga llamado usno – en el Cuzco" ("throne and seat of the Inca called *usno* – in Cusco").

an elevated position, was clearly a potent symbolic act; especially given the religious symbolism of the Inca's association with the sun. Accordingly, in her sensorial approach to Inca cosmology, Constance Classen (1993: 54) identifies the pre-eminence of light and sight for the Incas; she suggests that by contrast the power of sound and hearing was something they sought to control.[4] Stressing this visual dimension, the structure of the *ushnu* platform would not only convey the elevated status of the person who ascended it, but would have enhanced the person's visibility. Indeed, Betanzos specifies how from his seat atop the platform, during his visits to important towns in the provinces, the Inca (Huayna Capac) could both see everybody in the plaza and be seen by them:

> "On reaching the town, the Inca climbed up on that platform and sat there on his chair. From there he could see everyone in the plaza, and they could all see him. They brought out before him many lambs whose throats were cut in his presence, and they offered them to him. Then they poured out much *chicha* into that basin which was there for sacrifices. The Inca drank with them, and they with him. Then he came down from there, danced and sang with them, clasping their hands, joining to make a circle, and he ate with them." (Betanzos 1996 [1551]: 168; transl. Hamilton and Buchanan)[5]

It is notable that while the Inca's presence on the top of the platform invokes power and supremacy through visual means, his participation in music making, dancing and feasting, after descending to join his subjects assembled below, stresses social integration. This is further highlighted by the way that on such visits to regional capitals Huayna Capac made himself look "like a native of the province" by dressing and having his hair arranged according to local custom (*ibid.*, 168). This account also suggests that music, dance and feasting belong in the open and shared spaces at the foot of the *ushnu* rather than the exclusive space on its summit and there are good acoustic, as well as symbolic, religious and political reasons for this.

From a design perspective, the raised structure of the *ushnu* may be seen to enhance the visual impact of performances staged on its platform. But this form of construction is less likely to be effective for auditory communication, as acoustic transmission over a distance of more than a few metres requires reflective surfaces to reinforce and direct the sound waves (Taylor 2000: 40).[6] Sound waves transmitted from a high platform of this type will tend to spread out and lose energy quite quickly as they travel away from the sound source. In short, the acoustic properties of *ushnu* platforms are likely to have been incidental to the building and design process. However, factors, such as, size, position, shape (squared or pyramidal), local topography and environment would have resulted in varying acoustic affordances from one *ushnu* to the next. This point has been confirmed by the work of Meddens and Frouin (2011), who discovered considerable variation when they measured the transmission of sounds from a number of provincial *ushnu* platforms in high altitude settings. Sounds emitted in the centre of such platforms were inaudible to people positioned around the structure; the sound waves effectively passing over such listeners' heads. This made it necessary for the speaker to stand on the edge of the platform for sounds to be audible from below (*ibid.*, 30). It should also be noted that *ushnu* vary considerably in size and quality of construction. For the case of the

4 This is manifested in a range of contexts cited by Classen and, for example, the seasonal alternation of musical sounds (Stobart 2006b: 47).

5 "[…] y como llegase el Ynga al pueblo subíase en aquel castillo y allí se sentaba en su silla y de allí veía a todos los de la plaza y ellos le veían a él y siendo allí traían delante del muchos corderos y allí se lo degallaban delante y se los ofrecían y luego le vaciaban delante mucha chicha en aquella pileta que allí estaba en sacrificio y él bebia con ellos y ellos con él y luego descendía de allí y bailaba y cantaba con ellos asidos de las manos a manera de quien anda en corro y comía con ellos […]." (Betanzos 1968 [1551]: 185)

6 By contrast, acoustic reflections from the sidewalls and ceiling of a hall are well known to amplify the sounds of speakers or musicians located on a stage, raising their aural social status in relation to that of the listeners. This natural amplification also increases the apparent aural size of the speakers/singers and the size of the acoustic arena (Blesser and Salter 2007: 53).

provincial "three-platform structure" at Incapirca Waminan (Fig. 2), the highest platform is 2.42 m above the lowest, and measured 22.8m in length and 9.6 m in width (*ibid.*, 35).

A further challenge to effective sound transmission was wind. After noon this tended to increase, drowning out speech from the platforms, thereby restricting effective sound transmission to the morning hours (*ibid.*, 32). Meddens and Frouin (*ibid.*) also note that the 40 Db cut-off-point for voice data (i.e. the comprehension of projected speech from one side of an *ushnu*) was usually around 50 m from the platform. These various factors suggest that although many larger *ushnu* platforms may not have been acoustically ideal places from which to address people assembled below, this may nonetheless have been feasible or even common practice in certain cases, as evidenced by Molina. He writes that, in each town along the main highways, where the Inca had storehouses, there was a

> "[...] great royal plaza, in the middle of which was a tall rectangular platform *[usnu]* with a high stairway leading up to it. The Inca and three lords would ascend this to address the people and to review the fighting men when they held parades or assemblies." (Molina 1982 [1553]: 37; transl. Hemming and Ranney)[7]

Meddens and Frouin have speculated whether the Inca and his three lords would have taken turns to speak or employed "a form of synchronised address," one from each of the four edges of the *ushnu* (2011: 32). The effectiveness of transmission would probably have greatly depended on the size of the platform. Raising the position of performers, so that they can easily be seen, not only creates a sense of presence and focuses attention – differentiating such actors from others in attendance – but may also be seen to enhance the effectiveness of verbal communication in other ways. For example, facial expression, gesture or body posture often provide clues or context for verbal meaning, while sight of the movements of a speaker's mouth may partially compensate for poor sonic transmission. These factors are well known dimensions of performance

Fig. 2 The provincial ushnu platform at Incapirca Waminan, Ayacucho, Peru. Photo by Francisco Araujo-Ferreira.

practice today but are rendered ineffective if the stage, as in the case of certain larger *ushnus,* is too high or distant.

In this context, it should be remembered that smaller platforms or stages, often constructed of wood or gold, were also used by the Inca (whether or not called *ushnu)* and sometimes referred to as *teatro* or "theatre" (e.g. Anónimo 1906 [c. 1565]: 158). For example, Garcilaso (1609: Bk. 6, Ch. 23) describes how the Inca was seated on a throne of solid gold placed on a golden block (*tablón*). Similarly, in the famous 1535 account of the Inca and six hundred nobles singing with the sun, the volume of their voices matching its rise and descent, we are told that the Inca's seat was placed on a very fine *escaño* or "platform" (in Tomlinson 2007: 202). Small, possibly portable and wooden, stepped throne structures suggesting a height of no more than 1.0 m to 1.5 m, and on which the Inca is shown seated, are depicted by both Murúa (2004 [1590-1609]: 44v) and Guaman Poma (1980 [c. 1615]: 356, 370), the latter labelling these structures *usno.* We cannot be sure how such depictions might have related to actual structures, in terms of scale and construction materials, but there is perhaps reason to suppose the existence of various sizes of Inca throne platform. The presence of music is espe-

7 "[...] plaza grande real y en medio de ella un cuadro alto de terraplen, con una escalera muy alta: se subian el Inga y tres señores a hablar al pueblo y ver la gente de guerra cuando hacian sus reseñas y juntas." (Molina 1968 [1553]: 316)

Fig. 3 a, left) The Inca Atahuallpa seated on an ushnu facing Francisco Pizarro (Murúa 2004 [1590-1609]: 44v); b, above) detail: General Quisquis blowing a conch shell trumpet (possibly with a pingollo flute player behind). Reproduced with kind permission of Sean Galvin.

cially notable in the drawing from Murúa (Fig. 3). It depicts Atahuallpa's general Quisquis standing on the ground, his face level with the feet of the Inca seated on his throne; Quisquis' cheeks are puffed-out as he sounds a conch shell trumpet (labelled *guayllaquepa*). From the mouth of a man immediately behind him extends a long, narrow, brown coloured object; a *pingollo* flute? It seems likely that smaller platforms were regularly used by the Inca or nobles to address assembled people, but the acoustic constraints of large monumental *ushnu* platforms may have limited their efficacy for such purposes. Whilst the dramatic effect (perhaps as much visual as aural) of playing a conch or other forms of Inca trumpet from the top of a large *ushnu* platform can be imagined – even by general Quisquis himself in the Inca's absence – other forms of music, song and dance would appear to be better adapted to the areas around the base of such structures. In addition, these latter forms of display may have been constrained to ground level due to the status of the performers who in many cases – judging from other accounts of Inca music making – would not have been of noble rank.

Although, sound transmission from most of the provincial *ushnus* measured by Meddens and Frouin was unremarkable, the site at Usccunta provides an interesting exception. Among a range of other structures, this seasonal pilgrimage centre of the Soras, Rucanas and later the Incas, includes two *ushnu* platforms placed about 520 m apart on a wide plain, one positioned 19 m above the other. Meddens and Frouin suggest that music and dance would have been performed in the large plain between these platforms, and link the two *ushnu* – respectively built on red and grey bedrock – with the dual nature of Inca communities (2011: 36). A *pututu* (conch shell trumpet) sounded from the higher elevation platform was audible from the lower platform, leading them to speculate that the dual platforms were intentionally placed "at the limits of possibly the loudest sound instrument available to the Incas, the *pututu*" (*ibid.*, 37-38).[8] This stress on the limits of audibility is fascinating and has certain inter-

8 It is notable that voice data was also audible over at least 250 m (Meddens and Frouin 2011: 38).

esting parallels. Firstly, in a striking cross-sensory equivalent, my own rural consultants in the Bolivian Andes linked the limits of visibility with that of life. They explained that *alma llajta* ("land of the souls") is situated to the West, just beyond what may be seen by the naked eye, but explained that it would nonetheless be possible to see the souls of the dead with the aid of a telescope (Stobart 2006b: 206, footnote 11). Might the perception of sounds have been understood in similar ways? Was the distance between the paired *ushnus* symbolic of some form of life span, linked with the transmission of sound? Another simpler and more practical parallel is found in the use of *pututus* by the Inca's messenger service or *chaskis*. Runners would announce their imminent arrival at a relay station (*tambo*) by sounding the *pututu,* thereby enabling the next runner to prepare himself for immediate departure. In such a context, the limits of audibility, as a means to judge time and distance, would have been critical for both the arriving and departing *chaski.* Might this same auditory sensitivity also have shaped the placement of the paired *ushnu* at Usccunta?

As imposing architectural landmarks linked with alien power, large provincial *ushnu* platforms have much in common with the church buildings of today's rural Andes. During certain feasts these serve as foci for ceremonial and festive performances involving music and dance, much as seems to have been the case for *ushnus.* Might there also be parallels in the ways that the vast majority of festive activity takes place outside – rather than inside – today's rural churches, which are rarely entered except to witness ceremonies and sacrificial acts performed by a priest (Stobart 2006b: 176)? Monolingual indigenous language speakers from rural communities tend to "watch" the priest's actions, rather than "hear" (understand) his words, yet after mass they often participate in festive music and dancing outside the church, perhaps circling it as a kind of sacred object, for example, in the *tawa iskina* ("four corners") dance. In short, I suggest that large monumental *ushnu* platforms were probably not constructed with their acoustic properties in mind, nor regularly served as stages for musical performance to an audience. Nonetheless, I have little doubt that they formed key foci for the performance of ritual and festive music, often alongside dance. Indeed, as powerful and sacred monuments, might they have been circled by dancers in ways strikingly similar to today's *tawa iskina* dance? I will return to consider some of the possible characteristics of open-air music in the vicinity of *ushnus* following some more detailed reflections on Inca musical and architectural acoustics.

Inca Acoustics and Myths of Inca Music

In his pioneering book *Music in Aztec and Inca Territory* (1968), Robert Stevenson includes the following and oft cited passage relating to Inca acoustics:

> "According to [Guaman] Poma de Ayala, the eleventh *coya* – wife of Huayna Capac (d. 1525) – assembled a band of more than a hundred *pincollori* to accompany her private dancers. Drums beat out the rhythms. She was the first to insist that proper 'acoustical' surroundings be found for each group of instruments. Pincollos, for instance, had to be played on a recessed stone platform against a wall called a *pingollopata,* or in one or two other special places – always different from those in which she listened to her female singers chant harawis." (Stevenson 1968: 265)

He references this information to page 141 of the facsimile edition of Guaman Poma's *Nueva Corónica y Buen Gobierno* (c. 1615), which is dedicated to a description of Rava Ocllo (the eleventh Coya). The passage celebrates the Coya's beauty, charitable and merciful nature, and wealth, but also credits her with ordering the staging of a great many feasts, attended by guests from many parts of the Inca Empire. Some detail is also dedicated to the musical entertainments:

> "[...] and she had a thousand Indian entertainers: some performed [choreographed] dances, others danced [more spontaneously], others sang with drums and ensembles[9] of flutes and *pingollos*[10] and

9 The term *músicas* is sometimes used today in the Andes to refer to groups of musical instruments, such as brass bands.

10 In the 1980 Murra and Adorno edition of this text place the editorial comment ["flauta de Pan"], i.e. "panpipes," appears after *pingollo.* As evident from a range of early sources, the term *pingollo* probably referred to a vertical flute with fingerholes.

> she had *harawi* singers in her house and outside it, in order to hear the said musicians who performed *harawi* in Waka Punku ['entrance to the wak'a'] and the *pingollo* [flutes] in Pingollonapata ['pinkillu plain'] in Cantoc and in Wiroy Pata, Cinca Urqco ['nose mountain']." (Guaman Poma c. 1615: 141; transl. Stobart)[11]

Many aspects of this text are hard to interpret adequately (especially as the original text includes no punctuation, see footnote). For example, what kinds of distinction might Guaman Poma have been making between *dansar* and *baylar* (both Spanish verbs meaning "to dance")[12] or between *flauta* and *pingollo* (*pinkillu*), common generic terms for "flute" respectively in Spanish and Quechua?[13] What emerges clearly, however, is a distinction between indoor and outdoor performance ("in her house and outside it") and the way that particular musical genres or instruments are linked to specific named places.

No evidence is offered in this passage (or elsewhere in Guaman Poma's *Nueva Corónica)* to support Stevenson's claim that Rava Occlo "assembled a band of more than a hundred *pincollori* to accompany her private dancers" or that the *pingollonapata* consisted of "recessed stone platform against a wall." Guaman Poma mentions "a thousand Indian entertainers" – literally "rejoicers" (*mil yndios rregocijadores*), but his text does not specify the size or nature of particular groups of dancers, singers, instrumentalists, or other types of entertainers. Nonetheless, Stevenson's description of a "band of more than a hundred *pincollori*" accompanied by drumming has been widely quoted and circulated as a "fact" of Inca music. This reference has perhaps acquired greater currency due to the way it is evocative of certain styles of modern rural performance practice. Large ensembles of flute or panpipe players accompanied by drums are an iconic image of Andean music, especially of the Aymara speaking communities of the Lake Titicaca region (Girault 1987; Turino 1993; Bellenger 1983/1986; 2007). Stevenson is to be warmly acknowledged for drawing our attention to the acoustic dimension of Guaman Poma's text, evident in the words: *para oyr las dichas músicas* ("to hear the said musicians"), but what playing *pingollo* flutes at the *Pingollopata* or *harawis* in other locations actually involved remains unclear. Stevenson directs us to the famous image which introduces the section on "Songs and Music" in Guaman Poma's *Nueva Corónica* (c. 1615: 141) (Fig. 4), which tantalizingly depicts two men playing *pingollo* flutes seated atop a high cliff on which, among other words, is written *pingollona pata.* The way the men are seated high on a rocky platform – a kind of natural stage – from where they can see and be seen has some interesting parallels with the idea of the *ushnu.* This image was presumably the inspiration for Stevenson's characterization of the *pingollonapata* as a "recessed stone platform against a wall," an idea which is suggestive of a modern concert hall or theatre where musicians or actors are raised on a (sometimes

11 "[...] y tenia mil yndios rregocijadores unos dansauan otras baylauan otras cantauan con tanbores y músicas flautas y pingollos y tenía cantoras haraui en su casa y fuera de ella para oyr las dichas músicas que hacían haraui en uaca punco y el pingollo en pingollona pata en cantoc y en uiroy pata cinca urco." (Guaman Poma c. 1615: 141)

12 Chalena Vásquez Rodríguez (pers. com. 2012) suggests that the verb *danzar* refers to theatrical or masked dances with predetermined choreography, and *bailar* refers to the more spontaneous dancing that occurs in family or communal festivities. In turn, this suggests a contrast between presentational and participatory styles of dancing (Turino 2008). González Holguín (1989 [1608]), in his Spanish/Quechua dictionary, includes the Spanish terms *baylar* (430) and *dançar* (471). He translates both into Quechua as *tusuni* ("I dance") – the first person singular of the common verb used today for "to dance" (*tusuy*) – and relates them both to the *cachua*, a circle dance.

13 In rural communities in certain parts of the Cusco region today, vertical duct flutes are usually referred to as *pingollo* (Parejo-Coudert 2001). By contrast, notched flutes, which require an embouchure to produce a sound (in the same way as the *quena* or *kena*) are termed *lawata* (Sonia Ccachua, pers. com. 2012). *Lawata* is almost undoubtedly a Quechua language version of the Spanish word *flauta* ("flute") and in other parts of the Andes is sometimes used to refer to duct flutes.

Fig. 4 "Songs and Music" from Guaman Poma's Nueva Corónica y Buen Gobierno (Guaman Poma 1936 [c. 1615]).

Fig. 5 A representation of the city of Cusco from Guaman Poma's Nueva Corónica y Buen Gobierno (Guaman Poma 1936 [c. 1615]).

recessed) stage, thereby improving visibility. For concert halls a wall is often positioned behind the performers which helps project sound forward towards an audience, but no such wall is in evidence in this drawing. Nonetheless, the rocky riverine environment depicted by Guaman Poma certainly suggests the possibility of acoustic reflection, and it is notable that in his 1608 Spanish/Quechua dictionary González Holguín (1989 [1608]: 357) translates *vrccop yachapaksimin* (literally "the mountain speaks in imitation") as *el eco* ("the echo").[14] In addition, the scene suggests that the flute players might be involved in the kinds of amorous musical expressions reported by Garcilaso de la Vega:

> "[...] they played their songs [on *pingollo* flutes of four or five fingerholes] in measured verse, which for the most part were about the passions of love. [...] the lovelorn lad, playing music in the night on his flute, would speak through his melody to the lady and to all the world of his content or discontent of spirit, according to the favour or disregard she showed for him. [...] In such a way he could be

14 González Holguín (1989 [1608]: 25) also includes the entry: *Ancaylli, o, cunca. La voz de persona, o animales, o grita, o peñas que responden a la boz* ("*Ancaylli* or *cunca* [neck/throat/voice]. The voice of a person, or of animals, or a shout, or rocks that respond to the voice").

said to speak through the flute." (Garcilaso 1609: Bk. 2, Ch. 26; transl. Stobart)[15]

But Guaman Poma's image of this imagined musical landscape implies more than a simple serenade; the players appear to be contemplating, and inspired in their playing, by two naked women in the swirling river Watanay below. Indeed, this image, which I have discussed in detail elsewhere, has many resonances with twentieth-century Andean *sirinu* (*sirena*) traditions, where musicians acquire new melodies and powers of musical enchantment through visiting waterfalls and listening to water (Stobart 2002b: 83-85; 2006a: 108-110). Might this suggest that the depiction of flute players high on a natural stage is less about the assertion of visibility and status, evident with *ushnu* platforms, than with music's connection with enchantment, desire and the powers of the natural world? Further labels on this drawing include several of the other places with which Rava Occlo's musicians are identified: *Waka Punku, Cinca Urco, Cantoc [Uno]* and *Wiroy Pacha*.[16]

What Stevenson does not tell us is that all these names also appear on another drawing by Guaman Poma (Fig. 5), an early colonial representation of the city of Cusco (1936 [c. 1615]: 1051 [1059]). Unfortunately, it is difficult to relate the labels on this highly schematic drawing to actual locations of the city's topography. *Waka Punku* ("Door to the Sanctuary") – the site where *harawi* singing was apparently performed – is shown centre left in the drawing, immediately below the Watanay river.[17] It resembles a gabled roof without walls. Could this have been a bandstand-like open-air construction? The words *Pingollonapata* ("*Pingollo* Flute Terrace/Flat Place") are written on the upper section of an arch-like structure which is located immediately beneath the church of San Cristóbal (top, left). Might this be the steep area below San Cristóbal (around today's Resbalosa district)? Did it take the form of a kind of terrace cut into the hillside where *pingollo* flutes were played? *Wiroy Pacha* and *Cantoc Uno* are respectively shown on the top and bottom right of the drawing, but *Cinca Urco* ("Nose Mountain"), at the top left corner of the image, is presumably a reference to the Senqa mountain range. Below *Cinca Urco* in his "Songs and Music" drawing, Guaman Poma writes *Quean Calla* (Quiancalla), a hill and *wak'a* seven miles north west of Cusco, which formed part of the sacred Senqa mountain range.[18] Two pillars at Quiancalla were used for solar observation and a series of ceremonies were performed there at the solstices (Cobo 1990 [c. 1653]: 59; Zuidema 2008: 253). Might *pingollo* flute players have accompanied the priestly processions from Huanacauri to Quiancalla for these ceremonies (Zuidema 2008: 258)? Alternatively, the sheaves depicted in the "Songs and Music" drawing behind the two *pingollo* players and their headbands, implying noble status, might suggest that these are boys participating in the initiation ceremonies during the Itu Raymi festival. Initiates participated in a race which passed via Quiancalla and were required to carry bundles of straw back to Cusco (Cobo 1990 [c. 1653]: 149). However, even if we can identify the *pingollo* flute players, we still have no evidence about the nature of the acoustic spaces mentioned by Guaman Poma or how to interpret the identities, roles and remit of the "one thousand entertainers" he attributes to Rava Occlo. We also need to bear in mind that the kinds of musical events he describes were already distant in time; his account of Inca history being based on tradition, oral testimony and no shortage of invention (Adorno 1986).

15 "[...] tañían sus cantares, compuestos en verso medido, los cuales por la mayor parte eran de pasiones amorosas [...] el galán enamorado, dando música de noche con su flauta, por la tonada que tenía decía a la dama y a todo el mundo el contento o descontento de su ánimo, conforme al favor o disfavor que se le hacía. [...] De manera que se puede decir que hablaba por la flauta." (Garcilaso 1609: Bk. 2, Ch. 26)

16 *Cantoc Uno* appears in place of *Cantoc* and *Wiroy Pacha* instead of *Wiroy Pata*.

17 Tom Zuidema (pers. com. 2011) suggests that *Waka Punku* refers to where the Watanay river, here called *Sapi* ("Root"), enters Cuzco becoming narrow.

18 To this day, black clouds over the Senqa range are seen to presage rain in Cusco and in rural areas *pinkillu* flute music is sometimes connected with attracting rain.

Palaces, Great Halls and Temples: The Architecture of Cusco

Even if the entertainments and acoustic spaces attributed to Rava Occlo remain obscure, Guaman Poma's account raises other important questions about the nature of Inca music and performance space. In particular, I now wish to turn to the distinction he makes between "in her house and outside it." The acoustic contrast between indoor and outdoor performance has been of central importance to the development of musical performance practices in many parts of the world. For example, in medieval Europe musical instruments were categorized as *haut et bas* ("loud and soft"), distinguishing between loud instruments for outdoors, such as trumpets, shawms, bagpipes, and drums, and gentle ones for chamber performance, such as lute, harp and flute (Bowles 1954; McGowan 1999). This distinction often reflected social relations; louder outdoor instruments tended to assert status or power, and were often linked with pomp, pageantry and public spectacle, whereas softer ones were typically connected with courtly sophistication and exclusivity. The walls of the houses or palaces of nobles or royalty not only excluded commoners, but their flat reflective surfaces created resonant spaces that contributed to the development of gentle, meditative genres of chamber music. Might, then, such forms of acoustic and social distinction have been relevant to Inca society and to performance practices? Did the Inca elites support music specialization to produce soft, delicate and finely crafted music for exclusive contemplation inside the chambers of their private residences, comparable to the miniature gold, silver and other work of specialists in the plastic arts?

To approach these questions I will examine a few examples of Inca imperial architecture to consider how these spaces might have related to musical practices and other forms of performance, turning first to Inca royal palaces.[19] One the few Spanish accounts of an Inca palace in Cusco is provided by Martín de Murúa (1946 [1590–1609]: 165–166). This palace complex, probably of Huayna Capac, consisted of two main sectors: an outer one with a large courtyard where a variety of palace visitors could be received or entertained, and an inner area, also with a courtyard, which was restricted to the Inca's family, officials and trusted court retainers. According to Murúa, the main, outer gate was defended by two thousand Cañari and Chachapoya guards,[20] while the inner gate – situated on the far side of the first courtyard – was guarded by a hundred captains from Cuzco. Beyond this

> "[…] and then, going farther in, were the salons and rooms where the Inca lived. And this was all full of delights, since various areas were planted with trees and gardens, and the royal lodgings were spacious and built with marvellous artistry." (Murúa 2004 [1590–1609]: 300; transl. Morris)[21]

Salazar and Burger note that due to the generally agreeable daytime temperatures in the Cuzco region, with little seasonal variation, the Inca – like other people – would have spent most of his waking hours outside. Consequently, little effort was expended on the comfort and elaboration of sleeping quarters, usually separate buildings organised around a patio, and even the Inca himself is said to have slept on the ground "on a cotton quilt covered with woollen blankets" (2004: 326-328). This focus on outdoor activities is also stressed in Guaman Poma's description of Inca royal palaces and it is notable that he immediately follows his discussion of royal recreation in the palace garden with a list of palace entertainers:

> "And [the Inca] relaxed with his Coya wife, princes, princesses, high lords and ladies, in the gardens which he had for this purpose – a special garden of

19 It should be noted that there was no single unitary palace complex linked to the Inca state and passed on from one ruler to the next. Instead palaces were built by, and considered the property of, individual rulers and their descendents (Salazar and Burger 2004: 326).

20 Ethnic groups subjugated by the Incas.

21 "[…] y después entraban más adentro, donde estaban las salas y piezas a donde el Inga vivía. Y esto era todo lleno de deleites, porque tenían diversas arboledas y jardines, y los aposentos eran muy grandes y labrados con maravilloso artificio […]." (Murúa 1946 [1590–1609]: 166)

> grass [lawn?] for the Inca's enjoyment. Also there were comedians who they referred to as *sauca rimac* [joke tellers] and *cochu rimac* [entertainers]; these were Indians of Wanka Wilka [Huancavelica]. Furthermore there were jokers, who they called *llama llama* [masked entertainers/acrobats], *haya chuco* [clowns] who were Indians from the Yungas [tropical lowlands], court jesters, comedians, Colla fools,[22] and 'woollen ears'. These [performers] provided amusement and festivities." (Guaman Poma c. 1615: 330 [332]; transl. Stobart)[23]

Might the garden context imply that these entertainments primarily took place outside, where temperatures would often have been more comfortable and where more light would have been available? No mention of musicians is included among these royal entertainers. However, a few pages later, Guaman Poma provides considerable detail about the music that accompanied the Inca when he made outings in his litter and lists a series of instruments associated with the Inca and his nobles which largely appear more suitable for open air than indoor contexts:

> "How the Inca went out on excursions with his footmen, [guards in] helmets, and standard [bearers, with] trumpets and flutes, dances and songs, and took naked *chuncho* [tropical lowland] Indians for display and to assert his supremacy. He went out in his litter decorated with precious stones with his Coya wife; in the same way he would go out to fight.
>
> How the Incas and powerful lords had large drums with which they entertained themselves which they called *poma tinya* ["puma drums," because the players wore puma skins] and the conch trumpet, natural trumpets, *pingollo* flutes, *antara* [panpipes], *pipo* [flute], *cata uari, uaroro, quena quena* [notched flute], *chiuca* [whistle?]. That in this kingdom there were [many forms of] music, and the *nucaya* feast of the [tropical] Yungas of each *ayllu* for the feast of the Incas and his leaders." (Guman Poma c. 1615: 332 [334]; transl. Stobart)[24]

Craig Morris has compared Murúa's description of Huayna Capac's palace complex with examples of administrative palaces in other parts of the Inca empire that are in a better state of archaeological preservation, demonstrating that in many respects they follow a similar basic model. For example, at the palace in Haunuco Pampa, a large outer courtyard (*plaza*) is surrounded by six large halls and two smaller buildings. Excavations inside these buildings have revealed large quantities of pottery, mainly of jars and plates, which Morris and his team have interpreted as evidence of feasting and drinking by large numbers of people (Morris 2004: 306). From this first courtyard further gates pass though into an inner courtyard, also surrounded by buildings, where the excavation of extensive ceramic, botanic and faunal remains also reveal evidence of communal feasting, although a higher frequency of decorated ceramics suggests participation by more privileged social groups (*ibid.*, 310). Morris's account implies that drinking and feasting would have taken place both outside, in the courtyards, and inside the halls (sometimes referred to as

22 From the southern Colla quarter (Collasuyu) – which included parts of today's highland Bolivia – of the Inca Empire (Tawantinsuyu).

23 "Y se huelga con su muger *coya y auquiconas* [príncipes] *y nustas* [princesas] *y capac apoconas, apoconas* en el güerto, jardín que tenía para ese efecto señalado *moya*, pasto de fiesta del *Ynga*. Tanbién auía truhanes que le llamauan *sauca rimac, cocho rimac*; éstos eran yndios de Guanca Bilca. Tanbién auía farsantes; a éstos les llamauan *llama, llama* [sombrero picante], *haya chuco* que eran yndios *yungas*, chucareros *saucachicoc* [que hace chistes en la corte], *acichicoc* [que hace reír], *poquis colla* [qulla estúpido], *millma rinri* [orejas de lana, torpe]. Éstos hacían farsas y fiestas." (Guaman Poma c. 1615: 330 [332])

24 "Cómo sale el *Ynga* a pasear con sus lacayos y morriones y estandartes, tronpetas y flautas y dansas y *taquies* y lleua yndios Chunchos desnudos por gala y señorear. Y sale en sus andas *quispi ranpa* [andas de piedras preciosas] con su *coya* señora; acimismo sale a pelear. Cómo tenía los *Yngas y capac apo* [señores poderosos] tanbores grandes con que se holgauan y le llamauan *poma tinya* [...] y tronpeta *guaylla quepa, pototo* [de caracol], flautas *pingollo, antara, pipo, cata uari, uaroro, quena quena, chiuca.* Que abía en este rreyno múcicas y *nucaya* [una fiesta] de los *yungas* de cada *ayllo* [parcialidad] para fiestas del *Ynga* y prencipales." (Guman Poma c. 1615: 332 [334])

kallanka or *galpones)* which surrounded them.[25] Garcilaso provides us with some interesting perspectives on this inside/outside distinction:

> "Among the many houses of the Inca there were very large halls [*galpones*], some two hundred paces in length and fifty or sixty paces wide, all as a single space, which served as a plaza, in which they held their feasts and dances when the rainy season did not permit them to be uncovered in the square." (Garcilaso 1609: Bk. 6, Ch. 4; transl. Stobart)[26]

Garcilaso mentions that four large halls were still standing in his youth and marvels at the size of the wooden beams that supported the straw roofs, his text implying that walls were either built of cut stone or adobe – materials with rather different acoustic properties. Apparently, one hall was used by the Spanish as a Cathedral and the largest, called *Casana*, accommodated some three thousand people (*ibid.*).[27] The implication of Garcilaso's words is that these great halls were primarily used when shelter from the rain was required, and may thus have been perceived as less desirable spaces for feasting and dancing than outside in the plaza itself. Might this mean that festive music, singing and dancing that under normal circumstances would have taken place outside was simply transferred indoors with minimal adaptation to the different acoustics?

Alternatively, might particular forms of music and song have developed in response to the acoustic features of particular Inca buildings? For example, a golden disc *(punchao)* depicting a face with rays radiating from it was hung in the temple of the Coricancha so that the first rays of the sun would strike it each day at dawn. As it was illuminated each morning, the *mamaconas* – women especially selected to care for the temple – would nourish it with special food and song (Tomlinson 2007: 142). Cobo describes the temple of the Coricancha as "the best stonework to be found in these Indies. Both inside and outside, the whole structure was made of carefully hewn ashlar stones that were skillfully set in place without mortar" (1990 [c. 1653]: 49). Furthermore, in his discussion of the main temple, that housed the altar of the sun and other major gods, he writes: "In place of tapestries, the entire inside, including both the ceiling and walls, was embellished with sheets of gold" (*ibid.*, 50). This suggests, firstly, that it might have been common practice to hang walls of important or elite buildings with acoustically absorbent tapestries, and secondly that the inner space of this particular temple would have been highly reverberant. Does this mean that the *mamaconas* sang in the temple and that they adapted their voices to its resonant acoustic space? However, Cobo's subsequent description raises some doubt about the location of their singing when he observes: "The only door [...] led to a small patio where the statue of the sun was placed during the day, unless it was taken to the square. At night this statue was put in its chapel" (*ibid.*). In other words, the *mamaconas'* dawn chorus may have taken place outside. Other *mamaconas* were similarly tasked with looking after the mummified remains of past Inca kings (*mallki*) which were stored in special buildings. Their duties included recounting the deeds of these Inca ancestors in song (Tomlinson 2007: 129), which again raises questions about how and where such singing took place. As the *mallkis* were taken outside and displayed in the plazas for major festivals, where each in order – from the first Inca onwards – was honoured with singing by the *mamaconas* and *yanaconas* (Betanzos 1996 [1551]: 79), is it possible that such

25 Among the musical entertainers accompanying such feasting, according to Murúa, were the *taqui aclla* ("chosen singers"), young women of nine to fifteen years of age selected for their voices and beauty. He notes that they would perform some playing drums - "to the Inca, his captains, and chiefs when they ate and entertained themselves." (Murúa 2004 [1590-1609]: 91r)

26 "En muchas casas de las del Inca había galpones muy grandes, de a doscientos pasos de largo y de cincuenta y sesenta de ancho, todo de una pieza, que servían de plaza, en los cuales hacían sus fiestas y bailes cuando el tiempo con aguas no les permitía estar en la plaza al descubierto." (Garcilaso 1609: Bk. 6, Ch. 4)

27 Zuidema identifies *Casana* as "the palace of the Inca" adjacent to Haucaypata, the main square in Cuzco (1989: 431, 436). In a personal communication (2011), he has also noted that the *Casana* palace was long, narrow and positioned alongside the river, having a series of gates that communicated with a cave (in Huacapuncu).

singing was more closely associated with outside than inside contexts? Also, given the focus of Inca religion on the sun, might open-air performance have carried special sacred significance?

In my reading of several of the main chronicles, I have encountered numerous accounts of music and song performance in open-air settings, but strikingly few references to such performances inside buildings.[28] Might this mean that even though Inca architecture provided private spaces for the Inca – walls and heavily guarded gates excluding common people from the inner confines of the palace – open-air feasting and performance in gardens, patios or courtyards was generally considered preferable to indoor settings? Were the interiors of buildings in such high altitude environments, perceived as uncomfortably cool (as well as dark), encouraging the predominance of outdoor activities and entertainments? The many images and accounts of Inca royalty or mummies shaded from the fierce highland sun by feather parasols (*achihua*) might also be seen to point towards the pervasiveness of open-air living. In turn, might these various factors have militated against the development of elite chamber music traditions, shaped by resonant interior acoustics, comparable to those of medieval Europe? Without a much more comprehensive study of the ethno-historical literature, these fundamental questions about the character of Inca music remain speculation. Even if it is not possible to draw any firm conclusions regarding the performance of music inside buildings, we can at least consider some of the dynamics of certain open-air performances.

Haucaypata: Public Performance in the Plaza

Many examples of Inca open-air ceremonial events, involving music, dance, vivid costumes and other dramatic performance aspects, are documented by the chroniclers. Song and dance, often with musical instruments, emerge as an integral aspect of almost any festival. For example, the *coyo* (or *aucayo)* singing, that marked the culmination of the *huarochico* initiation ceremony, was held in the main square in Cusco and accompanied by four large drums, each played by four nobles dressed in red tunics and puma skins (Zuidema 1985: 183, 196; Cobo 1990 [c. 1653]: 133; Gruszczyńska-Ziółkowska 1995: 68). Similarly, on the celebratory second day of Cusco's *situa* ceremony in September, when decorated mummies and *wak'as* were brought out into the main square in Cusco in a display of the finest clothing, foods and drinks, panpipe players danced in special colourful costumes with feather diadems on their heads (Molina 1916 [1574-75]: 44; Cobo 1990 [c. 1653]: 147).[29] Like many other festivities, both these ceremonies were staged in Haucaypata, Cusco's main square, which in Inca times is reputed to have been twice the size of today's albeit large and similarly located Plaza de Armas. Several chroniclers mention the presence of an *ushnu* in the centre of the square,[30] but rather than a raised platform or pyramid, this particular *ushnu* is principally identified as a form of a sink hole for offerings alongside a large sugarloaf shaped stone (Zuidema 1989: 412; Monteverde Sotil 2011: 12). Nonetheless, Pachacuti Yamqui (1993: 245 [1613: fol. 32r]) mentions Inca Wayna Capac

28 A notable exception is found in a drawing from the Murúa codex, labeled *cantora del ynga* ("singer of the Inca"), which – viewed from outside through a doorway – shows a lone woman seated on the floor inside a building and singing to a drum (Murúa 2004 [1590-1609]: 90r). This image accompanies a description of the Inca's *taqui aclla* ("chosen singers") who were trained and lodged in the "fourth house" (*ibid.*, 91r). Thus, presumably this image was intended to convey the intimacy of a *taqui aclla* refining her skills in the "fourth house," rather than performing before Inca nobility. Pachacuti Yamqui also includes a reference to music inside a building in his description of armed men and women entering the temple of Coricancha to remove the Inca standards whilst playing drum, *pululu* and conch trumpets, and panpipes (Pachacuti Yamqui 1993: 218 [1613: fol. 18v]).

29 This combination of panpipes and feather diadems is reminiscent of the *ayarachi* performances of the Titicaca region of today's Peru and Bolivia (Bellenger 1983/1986). Gruszczyńska-Ziółkowska (1995: 78) suggests that panpipes were associated with this southerly region of the Empire, the Collasuyu, and the Eastern tropical Antisuyo, rather than with the Incas themselves.

30 According to Zuidema (1989: 435), the *ushnu* was located on the boundary between the two parts of the plaza: Huacaypata (north-west) and Cusipata (south-east).

being seated at the *capac ushnu* in the plaza of Haucaypata, also suggesting the possibility of a platform. Preliminary archeological excavations in this central area have revealed lines of rough stones, alongside finds of golden, silver, copper and spondylus llama figurines (Monteverde Sotil 2011: 7). While this information implies that the centre of the plaza served as a centre for ritual performance, there is little evidence that these features would have helped amplify the sounds of voices and instruments. Similarly, the three walls of buildings bounding the northern edge of the plaza of Haucaypata were probably too distant to provide significant reverberation. Also, the immense but powerfully symbolic investment of covering the entire area of the plaza with sea sand, carried over huge distances from the Pacific sea (Sherbondy 1992: 61), may have served to muffle or absorb, rather than to amplify, such sounds. As the sand was "to the depth of two or more palms in some places" (*ibid*.), we might even wonder, whether – soon after being laid, at least – it also impeded the movements of the dancers.

The acoustic characteristics of the wide, open space of the plaza of Haucaypata are reminiscent, in many respects, of open-air rural feast contexts in high altitude regions of today's Andes. To appreciate the acoustic particularities of such highland environments, it may be helpful to compare them with the tropical forests of the Amazonian lowlands, which by contrast constantly buzz with bird and insect sounds. The forest canopy and vegetation reflect sounds to give a sense of acoustic enclosure and intimacy, but reduced visibility also makes sound critical for orientation. Among the musical expressions of indigenous peoples living in rainforest soundscapes of this kind it is quite common to encounter gentle and meditative musical sonorities which engage or even dialogue with the natural sounds of the environment (Seeger 1987; Beaudet 1998; Feld 1999). However, in the high Andes, where trees or other vegetation are often sparse and visibility is usually good, the sounds of birds and insects are relatively infrequent. In such highland environments, sound tends to dissipate, often giving the impression of overwhelming silence, albeit periodically punctuated by the noises of, for example, wind, thunder and human or animal activity. Constance Classen (1991: 252) has even suggested that "the emphasis the Andeans place on sound may be a way of compensating for the silence and vast empty spaces of the highlands." It is notable, in this context, that gentle and meditative musical expressions are relatively rare among indigenous highland groups today. Rather, musical expressions are apt to privilege dynamic and penetrating sounds and timbres; strong voices, especially women singing in high registers, tend to be appreciated and wind instruments are usually blown forcefully, stressing the upper harmonics. As any such environment-based characterization can be dangerously deterministic, it must be stressed that such tendencies should be seen alongside long histories of close cultural and economic exchanges between groups from varied altitude-based ecological zones, some groups inhabiting multiple elevations. We also need to remember that groups from many parts of the Empire with varied ecological characteristics, including the tropical lowlands, also participated in Inca feasts in Cusco.

So, would dynamic and penetrating sonorities also have been characteristic of performances in the plaza of Haucaypata in Inca Cusco? Would such sounds have been necessary to fill the space, and to motivate and entrain dancers, generating a sense of "groove" and group feeling? Cobo's comments about Inca musical performance are revealing in this context:

> "The Indians were much given to their *taquis* which is what they call their songs and dances. They celebrated happy events as well as sad, gloomy ones by singing, dancing and drinking their wine or *chicha.* For these celebrations they had many musical instruments which were played only at their dances and drinking bouts. The sound of all their instruments was rather harsh and not very artistic. In just one lesson, anyone will learn to play their instruments like an expert." (Cobo 1990 [c. 1653]: 243; transl. Hamilton)[31]

31 "Eran tan dados á sus *Taquis*, que así llaman á sus bailes y cantares, que con ellos y con beber de su vino ó chicha celebraban así los sucesos alegres como los tristes y lúgubres. Tenían para ello muchos instrumentos músicos, los cuales nunca tocaban sino en los bailes y borracheras, y todos hacían el són poco suave, y menos artificioso, pues calquiera que se pone á tocarlos, á la primera lición queda maestro." (Cobo 1893 [c. 1653]: 228-229)

Cobo betrays his Eurocentric musical perceptions and values, but also reveals some important points and striking continuities with my own, much more recent, experience of indigenous feasts in the rural Andes (Stobart 2002a). Firstly, Cobo observes that the use of musical instruments is restricted to "their dances and drinking bouts." Similarly, while music, song and dance are essential and much appreciated components of any major rural feast or ceremony today, they are rarely played at other times. Compared to the austerity of daily life, feasts and ceremonies represent a kind of sensorial explosion, when silence in replaced by a multiplicity of different forms of music, performed simultaneously and often in competition with one another, alongside feasting and drinking. However, in the context of Inca Cusco, this image of cacophonous festive music, dance and feasting centred on the *ushnu*, should probably be contrasted with more formal, unified or solemn types of performance.[32] For example, during the Inca's ritual acquisition of a song from the "red llama" in the *warisqa arawi* ceremony (Guaman Poma 1980 [c. 1615]: 242), we might wonder whether silence was strictly maintained in the square of Haucaypata while the Inca listened to and imitated the llama's whimpering cries (Stobart 2006b: 226-228). Were such restrictions lifted and participation in collective singing only permitted once the song had acquired a defined form and words? The songs of the *mamacona* or *taki accla,* that remembered and praised the Inca ancestors, may also have been relatively solemn in character. As they sang, processions of these specially selected female singers would have passed between two rows of tents containing the mummies of past Incas (*mallki*) (Tom Zuidema, pers. com. 2011; see also Tomlinson 2012). While certain festivities in Haucaypata stressed the full participation of nobles and commoners alike, and may have been quite riotous in character, others were restricted to higher status groups who took part in large-scale collective singing and dancing in unified formations. For example, Betanzos describes a celebration among the lords of Cusco during the reign of Inca Yapanque, for which the square was decorated with branches, flowers and live birds. He observes that the nobles were dressed in great finery and large quantities of maize beer and delicacies were consumed:

> "After eating they started to drink. After they had drunk, the Inca had four golden drums brought out. There in the square, they had the drums placed at intervals. Then they all, including those from both sections [upper and lower Cusco], joined hands. While the drums were played in the middle, they began to sing all together. The ladies, who were behind the men, started the singing. […] After this song, praising and giving thanks to the Sun and also to Inca Yupanque, they greeted him as the child of the Sun and sat down again." (Betanzos 1996 [1551]: 56; transl. Hamilton and Buchanan)[33]

Secondly, we find continuities between Cobo's account and today's rural practices in the way that music is almost always accompanied by the consumption of alcohol and in the way that most forms of music and song involve dancing. In turn, these tend to be closely integrated with other context-sensitive activities, involving specific forms of ritual, dress, decoration, drama, and feasting. Thirdly, and most important from an acoustic perspective, today's rural instruments and women's vocal production tend to favour strong and strident sounds, and upper registers. In contrast with the globally familiar sounds of

32 A sense of cacophony is suggested in Garcilaso's description of the celebrations to mark Inca Yupanque's victory in Yauyu: "All the nations who lived in the city, and the chiefs who came to take part in the festivities, entered in their teams, each one distinct, with different instruments – drums, trumpets, horns, sea shells – according to the custom of their land, with new and diverse songs composed in their own language." (Garcilaso 1609: Bk. 7, Ch. 16). However, Garcilaso also describes how, following this riotous entry, each delegation later performed before the Inca in turn (see below).

33 "Después de haber bebido, el Ynga mandó sacar cuatro tambores de oro, e siendo allí en la plaza, mandáronlos poner a trecho en ella; e luego asieron de las manos, todos ellos, tantos a una parte como a otra, y tocando los atambores que ansi en media estaban, empezaron a cantar todos juntos, comenzando este cantar las señoras mujeres, que detrás dellos estaban […] E después de este canto, dando lores e gracias al sol e ansi mismo a Ynga Yupanque, saludándole como hijo del sol, se tornaron a sentar […]." (Betanzos 1968 [1551]: 126-127)

urban pan-Andean neo-folklore music (where the panpipe and quena flute produce sweet and mellow sonorities), rural wind instruments are usually blown forcefully to create a strong, vibrant timbre, rich in upper harmonics or multiphonics. *Tarka* flutes, which are played in several regions of the Southern-Central Andes during Carnival, are a notable example of such characteristics (Fig. 6). Even though such vibrant sonorities are much appreciated locally and identified with notions of abundance and social harmony, they are literally "dissonant" from a European acoustic perspective (Stobart 1996; 2006b: 214-215), perhaps helping us appreciate why Cobo found instrumental sounds "harsh and not very artistic." These sonorities, so well adapted to open and acoustically unreverberant environments, would have communicated extremely effectively in the open space of Haucaypata, just as they do in rural feasts today. Ample archaeological evidence exists of Inca and other pre-Hispanic panpipes which, through the use of complex tubes (wider and narrower diameter tubes in a single pipe), are designed to create a vibrant beating effect (Pérez de Arce 2000; Gruszczyńska-Ziółkowska 2003; Gérard 2009; 2010: 93-94). Accordingly, the aesthetic among many rural Andean people today for vibrant (acoustically dissonant) timbre in wind music performance would appear to have continuities with pre-Hispanic acoustic knowledge, preferences and instrument construction practices.

Finally, Cobo's dismissive comments about the limited skill required to play Inca instruments, perhaps reflects (a) a combination of his inability to recognize the music's aesthetic values and structures, and thus to identify musical skills, and (b) the assumption – also common in Europe today – that music which prioritizes participation over technical skill, complexity or development is somehow inferior. As the people who perform music in today's rural communities are usually primarily agriculturalists or herders, who may play in excess of five or six distinct and seasonally differentiated forms of instruments through the course of a year – rarely rehearsing outside the feast context itself – it is hardly surprising that there is little emphasis on developed techniques or virtuosity. Indeed, in my experience such musical dimensions, which may be seen to disturb the conviviality of musical interactions, are rarely valued. For example, when I played a fast, virtuosic "party piece" to my rural Andean hosts on the recorder (that had often received acclaim in Europe), they were unimpressed. Rather than expressing appreciation, they suggested that I should blow the instrument more strongly. This focus on timbre and the prioritising of participation is especially evident in the *jula jula* panpipe music of Northern Potosí, Bolivia (Fig. 7). These instruments' simple technique enables large numbers of ad hoc players to swell the size and sound of the ensemble, leading to an immensely impressive musical effect and powerful group feeling (Stobart 2009: 112). As Turino (2008: 35) observes, "participatory music and dance is more about the social relations be-

Fig. 6 Tarka flute players during the feast of Carnival (Eucalyptus, Oruro, Bolivia). Photo by Henry Stobart.

Fig. 7 Jula jula panpipe players in the Feast of San Francisco (Toracari, Northern Potosi, Bolivia). Photo by Henry Stobart.

ing realized through the performance than about producing art that can somehow be abstracted from those social relations."

Nonetheless, a good number of accounts suggest that Inca musical performance was also sometimes presentational in character, and intended for performance to an audience, or specifically to the Inca himself. For example, according to Garcilaso, following the Inca Yupanque's victory at Yauyu, a month of festivities was held in Cusco's main square with much song, dance, feasting and drinking. During the celebrations, delegations from each province rose up from their seats one at a time, in order of seniority, to perform before the Inca, displaying the distinctive songs and dances of their region, accompanied by their servants playing drums and other instruments (Garcilaso 1609: Bk. 7, Ch. 16). Presentational performance and a requirement for instrumental skill (in contrast to Cobo's assertions) are also highlighted in Garcilaso's description of a group of panpipe players trained to provide music for the Inca. After explaining how the panpipers alternated pitches between instruments, in a manner reminiscent of the interlocking technique used between paired panpipes today, he writes:

> "The players were Indians trained to provide music for the king and his noble vassals, which, whilst being very rustic music, was not common. Rather, it involved considerable effort to learn and perform." (Garcilaso 1609: Bk. 2, Ch. 26; transl. Stobart)[34]

In short, Inca music making probably included diverse levels and forms of musical specialization and participation, where roles and expectations would have been closely linked to rank. The chronicles provide several examples of nobles and royalty participating in song and dance,[35] sometimes accompanied by servants playing instruments – although it is unclear to what degree such servants were selected for their special musical abilities. What is for sure is that the wide, open space of Haucaypata, with its central *ushnu*, was a prime focus for the performance of music and dance – which to be effective would have needed to adapt to this acoustic space.

Conclusion

In this paper I have suggested that most large monumental *ushnu* platforms were probably designed and built primarily with their visual, rather than their acoustic, impact and effectiveness in mind. Historical evidence exists that assembled troops were sometimes addressed from the top of such *ushnus* and a few platforms – largely due to the surrounding topography – have been found to afford notable potential for acoustic transmission, even if their use by the Incas to stage sound cannot be verified. From a specifically musical perspective, the idea that large monumental *ushnu* platforms served as stages from which musicians would have performed to an audience seems unlikely both for acoustic reasons and because ascent of these monuments, especially during ceremonial contexts, may have been restricted to individuals of high status. The sounding of the conch (*pututu*) or other trumpets, due to their acoustic power and connections with status, might however have been an exception. In addition, compelling questions arise regarding the dual *ushnu* platforms at Usccunta, where their distance of separation matches the limit of the *pututu's* audibility (Meddens and Frouin 2011). Might such sonic considerations have informed the positioning of these platforms? Despite my doubts about the idea of *ushnu* platforms as stages for music, I have nonetheless argued that *ushnus* – whether in the form of platforms or sink holes for offerings – frequently served as central foci for ritual and festive activity involving music and dance. Indeed, much evidence exists for the presence of diverse forms of festive music and dance performance in the environs of *ushnus,* most notably that of Cusco's main plaza, Haucaypata.

34 "Los tañedores eran indios enseñados para dar música al Rey y a los señores vasallos, que, con ser tan rústica la música, no era común, sino que la aprendían y alcanzaban con su trabajo." (Garcilaso 1609: Bk. 2, Ch. 26)

35 Young nobles and royalty may have acquired song knowledge from the *amautas*, the philosopher poets who were charged with their education, where Inca history and ways of understanding would have been constructed and transmitted through the medium of song (Garcilaso 1609: Bk. 2, Ch. 27).

This exploration into the acoustic and musical implications of the *ushnu* led me to explore wider aspects of Inca acoustic space, a theme that to date has received little serious attention in the literature. This was first addressed through revisiting Guaman Poma's account of Rava Occlo's entertainers which refers to both open air and interior forms of performance, and the association of particular instrumental and vocal genres with specific places. Nonetheless, the vast majority of Inca music making described in the early colonial chronicles refers to open-air performance contexts. This raises questions regarding the prevalence of sophisticated forms of Inca chamber music, performed by specialist instrumentalists and patronized by elite connoisseurs, comparable with contemporaneous art music traditions in, for example, India, Turkey, China and Europe.[36] The hierarchical nature of Inca society and the high importance ascribed to music by Inca nobility suggest good reason to expect the patronage of equivalent forms of musical expression. While the archaeological and ethnohistorical record certainly implies the existence of diverse and sophisticated forms of instrument construction and music making, what is less clear is how musical expressions might have been shaped by – or adapted to exploit – the acoustics of resonant interior spaces. Indeed, how commonplace were resonant interior spaces as an aspect of Inca architecture, how privileged as spaces for living or entertainment, and how sought after as musical or ceremonial performance spaces? Did the Incas commonly distinguish between musical genres suitable respectively for chamber or open-air performance? It is striking, when approaching these questions, how little evidence for Inca chamber music – especially for instruments – emerges from the historical record. Could it be that few early Spanish chroniclers had access to or chose to describe the inner spaces of Inca palaces (Morris 2004: 299) or the homes of nobles?[37] Alternatively, in the case of Cusco, which is situated at an altitude where outside temperatures in the day are often more comfortable than those inside buildings, might this absence partially reflect a preference for open-air living? Nonetheless, even if this was the case, it would be unwise to generalize any such tendency; living circumstances are sure to have varied around the Empire, according to elevation and environmental conditions, as well as cultural norms. We should also remember that musical expressions from other ecological zones of the Empire, such as the tropical Yungas, were played to the Inca in Cusco. This in turn raises questions about how such sonorities might have been adapted to Cusco's high attitude context and cultural expectations.

In comparing accounts of open-air Inca performances in Cusco's central plaza, Haucaypata, with festive music making in today's rural Andes, I identified certain shared priorities and aesthetic continuities. Both the "complex tubes" of Inca or certain other pre-Hispanic panpipes (designed to produce a vibrant or "dissonant" sonority) and the vibrant, high-pitched and piercing quality of many of today's rural wind instruments or vocal styles arguably reflect the contingencies of open-air performance spaces. Indeed, the sound of some of today's rural wind instruments (which is often considered "harsh" by unfamiliar listeners) can seem overpowering in resonant interior spaces. This leads to questions about the types of sonorities sought out and appreciated by Inca instrumentalists (and singers). A key argument of this paper is that any serious examination of how Inca or other pre-Hispanic instruments sounded needs to take acoustic space into consideration. In other words, to sound archeological instruments without reflection on the acoustic contexts for which they were designed may distort attempts to understand the nature of the music or sound making practices for which they were intended. Indeed, prior to receiving instruction, my own European students typically produce low-pitched, clear and mellow sonorities from my collection of Andean rural instruments. Such sonorities would be unthink-

36 See Booth and Kuhn (1990) for characteristics of some of these latter art music traditions. Whilst some such traditions were transmitted orally, it is also notable that many were underscored by long histories of written music theory. Although Inca music making was probably subject to various forms of oral music theory (c.f. Zemp and Malkus 1979), a lack of writing may have meant that such theory was less specialised and exclusive.

37 In some ways this seems unlikely as certain chroniclers, such as Betanzos, married into Inca nobility. Furthermore, Garcilaso and Guaman Poma were of noble Inca descent.

able for most rural Andeans who, instead, blow these instruments strongly to exploit their upper harmonics, multiphonics and buzzing qualities. Nonetheless, we should also be careful not to generalize about early Andean music aesthetics. The diversity of musical instruments and sonic objects from the archeological and historical record were undoubtedly designed with a wide variety of acoustic spaces, contexts and functions in mind.[38]

I began this paper by suggesting that it was unlikely that the Incas were indifferent to the musical affordances offered by resonant spaces. Nonetheless, I have also identified a striking paucity of references to Inca music being performed inside buildings in the accounts of early chroniclers. Despite this latter observation, I am still convinced that the Incas would have been deeply sensitive to acoustic resonance, whether or not this found expression in the development of various forms of chamber or temple music traditions, which exploited and were adapted to resonant interior spaces. Even if the music of today's rural Andeans tends to stress dynamic sonorities, which are well adapted for open-air performance, people are nonetheless sensitive to resonant spaces and objects, as well as to echoes. Indeed, the immense popularity of guitar-type instruments in the region, following their introduction from Europe, might in part be attributed to their internal resonance. My Andean hosts especially remarked on such instruments' ability to sustain sound, referring to the resonant sound produced when strings were strummed as *animu*, the animating quality of living things (Stobart 2007). Similarly, it is often rocky riverine locations – like that depicted by Guaman Poma (Fig. 4) – characterized by echoes, which are identified with the musical inspiration and enchantment of spirit beings referred to as *sirenas* or *sirinus* (Stobart 2006a). This paper raises many questions and provides very few answers, but nonetheless I hope it will inspire others to take some of these questions further.

38 In some cases spatial acoustics may have been a very minor consideration. For example, we might wonder whether the construction of Moche double whistling vessels should be understood more in terms of symbolic representation and a show of craft virtuosity than in sonic aesthetics.

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