

## Beyond Pulsating ‘Dissonance’: Reflections on Andean Sonorities

Henry Stobart

**Abstract:** Over the past few decades several studies of Andean archaeological sound-making objects and contemporary indigenous music making have identified an aesthetic that privileges vibrant and ‘dissonant’ sonorities. This has led to the widely accepted theory that pulsating timbre, and the technology to produce it, represents an enduring characteristic of Andean sound making, with deep pre-Hispanic roots. As such it may come to resemble a form of decolonising and counter-hegemonic Andean harmony, based on vibrant ‘dissonance.’ In this article I do not intend to dismantle this hypothesis – a potentially suicidal act, given my own close involvement in such research – but rather to offer some critical distance, reflections and context. We should certainly celebrate this exciting research, but – as with any influential theory which begins to acquire an aura of convention – we should also be alert to how over-generalisation, essentialism, and ideologically fuelled binaries might transform pulsating ‘dissonance’ into an Andeanist cliché. Furthermore, in an era of heritage making, we should be mindful of the tendency (or temptation) to privilege aspects of contemporary culture that suggest continuities with ancestral or pre-Hispanic practices, and the political expediencies for which this might be employed.

**Resumen:** En las últimas décadas, varios estudios sobre los objetos sonoros arqueológicos y la música indígena contemporánea andinos han identificado una estética que privilegia sonoridades vibrantes y ‘disonantes’. Esto ha llevado a la teoría ampliamente aceptada de que el timbre pulsante y la tecnología para producirlo representen una característica perdurable de la producción sonora andina, con profundas raíces prehispánicas. Como tal, podría llegar a parecerse a una forma de armonía andina descolonizadora y contrahegemónica, basada en una ‘disonancia’ vibrante. En este artículo no tengo la intención de dismantelar esta hipótesis – un acto potencialmente suicida, dado que yo mismo estoy profundamente involucrado en este tipo de estudios; sin embargo, quiero marcar cierta distancia al ofrecer unas reflexiones críticas, así como proporcionar algo de contexto. Sin duda, debemos celebrar este tema importante de investigación, pero, como con cualquier teoría influyente que comienza a adquirir un aura de convención, también deberíamos estar atentos a cómo su generalización excesiva, el esencialismo y los modelos de pensamiento binarios impulsados ideológicamente facilitan la transformación de esa ‘disonancia’ pulsante en un cliché de lo andino. Además, en esta era del patrimonialismo deberíamos ser conscientes de la tendencia (o tentación) a privilegiar aspectos de la cultura contemporánea que supuestamente revelan continuidades con prácticas ancestrales o prehispánicas, así como de los fines políticos para los cuales esta tendencia podría ser empleada.

In his 2018 book “*Cuentos fabulosos*” (“Wondrous Stories”), Julio Mendívil offers a range of critical perspectives on late-nineteenth and early twentieth-century theories about Inca music.<sup>1</sup> A century ago, some of these theories – most notably the idea that Inca music was pentatonic – were highly influential, widely accepted, and seen to be supported by scientific analysis. There was also a ‘common sense’ aspect to Inca pentatony as pentatonic melodies

---

<sup>1</sup> Mendívil’s title inspiration comes from the song title “Wondrous Stories” by the British progressive rock group Yes. He suggests that the paradoxical image invoked by this song’s lyrics – of lands that, while not far away, only exist in the mind – encapsulates musicologists’ approach to the study of the Andean music in the late-nineteenth century (2018: 15).

were common in contemporary Andean folk and indigenous music. Although early musicologists were often aware of archaeological examples of pre-Hispanic instruments which failed to support the pentatony hypothesis, its discourse prevailed and such discrepancies tended to be ascribed to poor craftsmanship, or an incomplete sample (Mendívil 2018: 85-88). Today, the theory of Inca pentatony is largely of interest for what it tells us about the history of ideas and past musicological practices. Few – if any – contemporary scholars would approach Inca pentatony as a foundation on which to build understandings of pre-Hispanic Andean music. Looking back a century, this once influential theory might appear flawed; a wrong turn or ‘red herring.’ However, rather than simply dismissing the work of these early Andean music scholars as defective, Mendívil stresses continuities with the scholarly practices of today:

“To be honest, I don't see a substantial difference between what these authors [early musicologists] did and what we do in our current scientific practices. Like them, we also re-signify the musics we study by extracting them from a given context and space and relocate them in other different ones according to our own imaginaries, according to our own wondrous stories.” (*ibid.*, 279-80; my translation)<sup>2</sup>

Such a statement forces us to ask: how will today's theories or contributions to knowledge be viewed in a century's time? Will our research be celebrated as a rich, rigorous, and nuanced foundation on which to build future understandings of Andean music? Or, will people look back on the approaches and theories of today as misguided and flawed, as well as hopelessly distorted by the academic fashions, social dynamics, and ideological tendencies of our time?

It is with these questions in mind that, in this article, I turn a critical eye to the wealth of contemporary scholarly interest in pulsating ‘dissonance,’ as a widely identified characteristic of both contemporary rural and pre-Hispanic Andean music/sonic practices. My intention here is to offer alternative perspectives and critical distance, rather than undermine this fascinating body of research. No scholarly work can ever be ‘future-proofed,’ but I hope that my discussion may – in some small way – help to contextualise and ultimately reinforce this rich vein of scholarship, and in so doing avoid potential accusations of essentialism or over-generalisation, and the danger that Andean pulsating ‘dissonance’ becomes a cliché. Before turning to this theme in more detail and outlining my approach, I wish to dwell a little

---

<sup>2</sup> “Siendo sincero, no veo diferencia sustancial entre lo que hicieron estos autores y lo que hacemos nosotros en nuestras prácticas científicas actuales. Al igual que ellos, nosotros también resignificamos las músicas que estudiamos al extraerlas de un contexto y un espacio dados y reubicarlas en otras diferentes según nuestros propios imaginarios, según nuestros propios cuentos fabulosos.”

longer on some of the dilemmas faced by music archaeologists; ones from which, I hasten to add, music ethnographers (like myself) are far from immune. The perceptual, aesthetic and epistemological challenges faced when encountering culturally unfamiliar music can be overwhelming, even when we are able to speak to musicians in a common language, witness and participate in their sound/music making, and share other aspects of their lives (Stobart 2013b). However, building on the evidence of a few objects or fragments and limited context, music archaeologists have far greater challenges to face when attending to past sound worlds, even if – arguably – they enjoy considerable liberty of interpretation.

### **Survivals from the Past?**

Arguably the most influential and authoritative declaration of the Inca pentatony theory appears in Raoul and Marguerite d’Harcourt’s classic 1925 book *La musique des incas et ses survivances* (“The Music of the Incas and their Survivors”). As this title makes explicit, the book’s primary object of study was the music of the Inca past, rather than the Andean present – even though, in reality, the majority of the book is dedicated to the analysis of the contemporary music that the d’Harcourts encountered, recorded, transcribed and analysed.<sup>3</sup> In line with other scholars in this era of Comparative Musicology, the study of indigenous and folk music was largely geared to informing understandings of supposedly ‘advanced’ or ‘high’ musical cultures. In some cases, folk and indigenous musics were seen as the primitive or less evolved antecedents of high music culture (especially European classical music), while in others they were valued as the vestiges – albeit ‘degenerated’ or corrupted – of glorious past cultures, such as the Incas (Racy 1993: 82; Whaples 1998: 15). Thus, in the Andes – as in several other parts of Latin America – indigenous people became viewed as a crucial source of knowledge for studying pre-Hispanic cultures. Such people were of interest as representatives of the past, as ‘culture bearers,’ and for what their culture might inform scholars about past civilizations. Thus, scholars concerned themselves with documenting, salvaging, or ensuring the uncorrupted preservation of these cultural traces. Considerations of culture bearers’ existence, as actual people living in the present, were often eclipsed by past-orientated scholarly motivations. This same process – fascination in Inca music motivating interest in indigenous music – is made explicit in the subtitle of Mendivil’s 2018 book: “The

---

<sup>3</sup> The d’Harcourts made many wax cylinder recordings. However, after transcribing them into music notation they melted down the wax layer, as if wiping an audio tape, in order to be able to make further recordings.

Invention of Inca Music and the Birth of Andean Music as an Object of Ethnomusicological Study” (my translation).<sup>4</sup>

Critical scholars working in the Andes will be familiar with the above dynamics and perhaps with the devastating critique of ethnographic research in the rural Andes by Orin Starn (1991) entitled “Missing the Revolution.” Starn claimed that ethnographers had been so caught up with documenting *lo andino*, an essentialised idea of “timeless” indigenous people living in some kind of “preconquest [Andean] past” (1991: 66), that they had failed to notice the Peruvian internal war brewing around them. His accusation regarding this terrible conflict – in which an estimated 70,000 mainly rural peasant people died – was, I believe, unfair. However, in other respects his critique was timely and helped motivate a profound shake-up in Andean anthropology (Ferreira and Isbell 2016). Starn interpreted the approach to rural ethnography of the time as building on *indigenismo*, an early twentieth-century intellectual and political movement. Unlike earlier evolutionist approaches, which viewed “Andean peasants as degraded subhumans,” *indigenistas* presented them as “the bearers of noble precolonial heritage” (Starn 1991: 66). According to Starn, by the 1930s this idea of an “unbroken Andean heritage had expanded beyond the label of *indigenismo* to become common sense across art, politics, and science” (*ibid.*, 67). In the late 1980s, ethnographers were still, in Starn’s view, recycling this approach to rural Andean culture as embodying continuity with a pre-Hispanic past, even though the work of some of his targets reflected highly nuanced approaches to ethnohistory.

Starn’s critique has obvious implications for music archaeologists working in the region. Rather than basing their interpretations of prehistoric musical objects on alien musical traditions (for example from Europe), many turn to the ethnography of more recent Andean cultures. This, nonetheless, creates a paradox: to claim unbroken cultural continuity – to understand sound in the present as a possible continuation, echo or legacy of the past – is just as problematic as to deny any possibility of cultural residues – or argue that past sounds do not leave tangible traces (Bithell 2006: 4; Izquierdo 2018: 6). Turning to the ethnography of more recent cultures of the region not only appears logical but it is also – arguably – a more ethical option; one which in turn can enable local people to connect with imagined pasts, sometimes as a powerful identity or political resource. This also means that the ‘wondrous stories’ music archaeologists tell about the past are neither neutral nor consequence-free. As

---

<sup>4</sup> “*La invención de la música incaica y el nacimiento de la música andina como objeto de estudio etnomusicológico.*”

scholars have little control over how these stories will be employed, great care needs to be taken in our story telling – especially, to avoid exaggerations and clichés.

### **Pulsating ‘Dissonance’ in Andean Flutes**

The theme of pulsating ‘dissonance’ as a characteristic of both pre-Hispanic and contemporary Andean flute sound, has proved a particularly rich and collaborative vein of research over the past few decades.<sup>5</sup> My use of the expression pulsating ‘dissonance,’ both in my title and throughout this paper, is intended to be flexible and inclusive. It encompasses the acoustically ‘dissonant’ sonorities (timbres) that authors variously describe as beating, undulating, pulsating, vibrant, buzzing, stammering, or characterize as a multiphonic roll. As we shall see, these words reflect varied forms of sound production, and diverse cultural contexts and meanings. One such form is the acoustic phenomenon of ‘beating,’ or ‘beats,’ which refers to an interference pattern consisting of the periodic variation in volume (amplitude), produced when two sounds of slightly different frequencies (pitches) interact.<sup>6</sup> The interval in pitch between these divergent beat-producing frequencies is often referred to as ‘dissonant’ – a technical term in acoustics, but also one that may suggest negative socio-cultural connotations that can carry over to cultural perceptions of sound. For example, according to many psychoacoustic studies, dissonant chords are perceived as “unpleasant” due to the “sensation of roughness” produced by beating (Cousineau *et al.* 2012: 19858).<sup>7</sup>

---

<sup>5</sup> This focus on sound and timbral quality, particularly when related to the practices, perceptions and aesthetic worlds of the players and makers of specific instruments, is particularly welcome, especially when compared to former studies which, despite collecting, measuring and describing instruments, often treated them as mute and detached from their cultural context.

<sup>6</sup> This reflects the alternation between so-called constructive and destructive interference as the two wave forms interact. In constructive interference the peaks of the different sound waves coincide and amplify the sound; in destructive interference the peaks and troughs of sound waves cancel each other out, thereby reducing the amplitude (volume).

<sup>7</sup> Connections between dissonance and beating, and their acoustic and mathematical foundations, have been extensively theorised. In particular, this builds on Helmholtz’s pioneering 1863 book “*Die Lehre von den Tonempfindungen als physiologische Grundlage für die Theorie der Musik*” (“On the Sensations of Tone as a Physiological Basis for the Theory of Music”), first published in English translation in 1875 (and most often cited in its 1885 second edition). Recent psychoacoustic studies of the perception of consonance and dissonance often differentiate between beating and harmonicity; the latter relating to a sonority’s harmonic series, where dissonant chords produce an inharmonic spectrum (Lahdelma and Eerola 2020). Despite such distinctions, these studies nonetheless suggest that “nearly all normal [Euro-American] listeners possess some degree of preference for consonance and aversion to beating” (Cousineau *et al.* 2012: 19858). However, in an experimental study of consonance and dissonance among the indigenous Tsimane of the Bolivian tropical lowlands, McDermott and colleagues observe that the Tsimane displayed “aversion to roughness” but not to dissonant (in)harmonicity. Based on this disassociation, they conclude that “the Western notion of dissonance is distinct from acoustic roughness, but closely related to inharmonicity” (McDermott *et al.* 2016: 549). The current paper raises interesting questions for future research, in the light of such findings.

As we shall see, the suggestion that beats or pulsating ‘dissonance’ are universally perceived as “unpleasant” clearly needs questioning and contextualisation. Accordingly, in this essay, I refer to ‘dissonance’ or ‘dissonant’ in scare quotes, in order to distinguish technical descriptions of sound from this word’s socio-cultural implications, as strife or disagreement. According to Gérard, the kinds “pulsations or beats,” described above produced by pre-Hispanic double whistles “closely resemble the pulsating sound quality of certain contemporary rural wind ensembles of the Bolivian Andes, such as the multiphonic vibrant timbre of specific types of flutes and panpipes” (2009: 125).<sup>8</sup> He also identifies aesthetic continuities with the vibrant sounds produced by the complex tubes of Chilean *pifilka* flutes and various pre-Hispanic panpipes (*ibid.*). Physicists are likely to point out that acoustic beats, as described above, and the stammering multiphonic roll (of, for example, the *tarka* flute) are different acoustic phenomena. The pulsating interruptions of sound in the so-called ‘roll’ can take various forms and result from different causes, including a vibrating pea in a whistle or regime instability at the threshold of the different registers in a wind instrument (Castellengo 1982: 7). The “hyperchaotic” multiphonic roll of the *tarka* flute has been identified as having its “origins in the inharmonicity of the partial tones” (Gérard *et al.* 2016: 5). This suggests that these flutes’ multiphonic elements often incorporate ‘dissonant’ intervals within their spectra (for example a slightly enlarged or reduced octave) that may provoke beats or pulsations, making it difficult to entirely separate the roll, as pulsing disruptions of sound, from acoustic beats within the rich and vibrant timbral picture.<sup>9</sup>

The vein of research into Andean pulsating ‘dissonance’ has benefited from the critical perspectives of a number of excellent scholars, and might be seen to represent a ‘success story’ for music scholarship. Indeed, the idea of pulsating ‘dissonance’ has gained an aura of ‘accepted knowledge’ or convention, attracting the interest of institutions and politicians, as well as indirect UNESCO recognition. While this would seem good reason for celebration, I suggest that such forms of acceptance can also risk complacency and should provoke us to keep asking ourselves critical questions. For example: to what extent should such vibrant timbre be generalised as a unified, diachronic and pan-Andean phenomenon? What kinds of (ideological) work does the idea of ‘dissonant’ pulsating timbre do? What might interest in such sonorities reveal about the contemporary moment and our experience of the sound world(s) we inhabit?

---

<sup>8</sup> From English abstract.

<sup>9</sup> Similar characteristics are found in the production of multiphonics with beats by other instruments, see for example Riera *et al.* (2014: 209) for the case of the saxophone.

This final question leads me to query how our experience of contemporary soundscapes might shape or constrain our imagination of ancestral sounds from the distant past. For example, would it have been possible to conceive of and produce the limpid vocal sounds which dominate today's historically informed performances of European Medieval, Renaissance and early Baroque music in the aesthetic world of late nineteenth-century Britain? Taste in musical sound in Britain at the time, as Christopher Page (2000: 141) notes, “was set by Victorian instruments with sonorities that could be as lush as the fabrics in the Victorian parlour.” Thus, to what extent was the arrival of the clean lines and sounds of modernism necessary to open our ears to the possibility of the crystalline sonorities that we take for granted in Early Music performance today? This now conventionalised performance aesthetic is – at least partially – a construction, based on our “imaginaries” or “wondrous stories” (as Mendivil would put it). In other words, the creativity of today’s musicians involved in historical performance practice is inescapably shaped by contemporary histories and conventions. Music from the past is “made” anew at each rendition. “In the moment of resounding it is fully and incontrovertibly part of the present” (Bithell 2006: 4). This also means that, in the absence of audio recordings, we must always question the degree to which it is possible to hear or recreate sounds from outside the temporal-cultural sonic environment we inhabit. In addition, we should remember that we all bring our various positionalities to bear.

The possibility of historical persistence of an aesthetic for pulsating sonorities in Andean sound making is especially eloquently and thoughtfully articulated by Arnaud Gérard in his 2009 article “*Sonidos ‘ondulantes’ en silbatos dobles arqueológicos: ¿Una estética ancestral reiterativa?*” (“Undulating Sounds in Archaeological Double Whistles: A Recurrent Ancestral Aesthetic?”). Gérard, a professor of physics, explains how – as also outlined above – acoustic beats or pulsations are produced when two pitches of slightly different frequencies are sounded simultaneously (*ibid.*, 126). He then considers various contemporary rural Andean panpipes and flutes which incorporate slightly divergent tube lengths, finger-hole placements, or tube diameters in order to provoke beating or multiphonic roll effects. In turn, these are compared with pre-Hispanic archaeological instruments, including panpipes of two internal tube diameters (so-called ‘complex tubes’) and double whistles with slightly differing chamber sizes, which produce a pulsating sound when blown. I will explore some of these examples in more details below, also drawing on a 2015 article by Gérard focused more specifically on the vibrant sound aesthetic of *tara*.

In this essay, I have no intention of dismantling Gérard's proposition that pulsating or vibrant flute sounds might be characterized as "a recurrent ancestral aesthetic" in many parts of the Andean region. Indeed, examples of prehistoric instruments presumably designed to produce these kinds of sonorities have also been identified in several other parts of the Americas.<sup>10</sup> Nor do I wish to demolish Gérard's hypothesis that the "dual concept" that some rural Andeans connect with the vibrant sonorities of certain flutes, encapsulated by "the Quechua-Aymara word *tara* ('double')," may have its roots in the way that pulsations are produced through the juxtaposition of two similar, but slightly divergent, components (Gérard 2009: 135, 142). Here I should stress that, in developing this hypothesis, Gérard richly draws upon my own ethnographic research which first brought the concept of *tara* to wider scholarly attention, in a 1996 essay entitled "*Tara* and *Qiwa* – Worlds of Sound and Meaning" (Stobart 1996a). In fact, I am immensely grateful to Gérard – who I count as a cherished and long-term friend and colleague. Drawing on his expertise in physics and instrument making, he has used my ethnographic work (with full acknowledgement) as a springboard for opening up a host of new research questions and perspectives. He has also tirelessly developed and followed through a range of important collaborative projects and publications (e.g. Gérard 1997, 2007, 2010). In other words, I am deeply implicated in the topic of vibrant flute timbre and to deny its importance to indigenous Andean culture would be both suicidal and contrary. Thus, critical perspectives in this essay are largely reflexive and an opportunity to take stock. They are most definitely not intended as attacks on the key scholars involved in this research, who – without exception – I hold in immensely high esteem. Rather, the nagging discomfort provoking this essay responds to the sense of a generalised acceptance – shaped by this influential research – that pre-Hispanic Andeans privileged pulsating 'dissonance' timbre to the apparent exclusion of other sonorities. While vibrant timbre is most certainly an important and 'wondrous' part of the story, I am equally convinced that it is not the whole story.

In the pages that follow I wish to make some of the following arguments. Firstly, there may have been a tendency to over-generalise the idea of pulsating 'dissonance' timbre, in particular from a reception perspective. I will suggest that this necessitates greater contextualisation and a more refined focus, thereby keeping our ears open to other possibilities. Secondly, although certain acoustic aspects might be shared as regards to how 'dissonance' beats or multiphonic pulsations are produced, we should be sensitive to how

---

<sup>10</sup> See, for example, Olsen 2002:101-102; Zalaquett and Espino 2019.



different forms or intensities of beating/vibrance might carry different associations or meanings. Thirdly, I wish to suggest that we should be aware of the seductive and expedient nature of pulsating ‘dissonance,’ especially from an ideological perspective, and in turn ensure that this is not permitted to become excessively dominant, exotic, unified or essentialised as an explanation of Andean sonorities. Finally, we should take care not to unwittingly adapt our research findings to the framework of pulsating ‘dissonance’ (as happened in the case Inca pentatony), where the expectation of finding such timbres can limit our perceptive range, making us oblivious to other types of sonorities.

I will approach the above arguments by first introducing my own encounters with pulsating multiphonics from ethnographic research undertaken in the Bolivian Andes in the 1980s and 1990s. In my broader historical reflections on this material, I will suggest that indigenous Andeans may have adapted European music technology to produce vibrant acoustically ‘dissonant’ sonorities. To what extent, I ask, should this be seen as evidence of an ‘ancestral’ aesthetic for pulsating ‘dissonance,’ or simply as adapting to new performance contexts? I then turn to examples documented by other researchers, and to how these have been related to archaeological instruments. After a brief consideration of wider global perspectives on ‘dissonance’ beats and buzzing timbres, I turn to the theme of tuning discrepancies, before looking more closely at how beating and vibrant multiphonics are represented in discourse. This leads to some ideological implications of pulsating ‘dissonance’ – as a kind of decolonising and counter-hegemonic Andean harmony – and reflection on the ways it has entered heritage politics, before some brief final reflections on *q’iwa* – a sonorous counterpart to pulsating ‘dissonance’ (*tara*).

### **Encounters with *Tara***

In January 1987 and at the height of the rainy season I travelled to the village of Yura in the Potosí region of Bolivia, arriving just in time for the feast of Epiphany, *Los Reyes* (‘The Kings’ or ‘Magi’). This important festivity also celebrates the annual rotation of the authorities of the four indigenous communities or *ayllus* surrounding Yura, their canton capital. Each of these *ayllus* was represented in the feast by its own band of *lawatu* (from the Spanish *flauta*) flutes and drums.<sup>11</sup> Over several days, the bands accompanied the ceremonial entrance of their local authorities into Yura and in visits to various houses in the village,

---

<sup>11</sup> For descriptions of feasts in Yura in which *lawatus* are played see Rasnake 1988 and Bigenho 2002.

including that of the *Corregidor* ('Mayor'), where copious quantities of maize beer were served. Then, surrounded by dancers from their *ayllu*, each group played until late into the night, circling the *rollo*, a large stone in the centre of the main square. In the cacophony, as each band competed to dominate the soundscape and demonstrate their stamina, I found myself caught up in a powerful sense of exhilaration provoked by this musical multiplicity.<sup>12</sup>

Shortly before the feast began I had purchased myself a *lawatu* flute from a maker in the nearby village of Vitichi (Stobart 1988). I was delighted with this new, beautifully crafted instrument, on which – building on my experience of having studied the recorder at music conservatoire in the UK – I felt able to make mellifluous sounds. During the fiesta I was welcomed into one of the flute bands and gradually picked up the main melodies for the feast, which were played monophonically in an approximate or 'wide' unison. While other members of the band seemed happy with my participation, they nonetheless regularly commented that I did not blow strongly enough and one player suggested that we swap instruments. The sound of his *lawatu* seemed disappointing compared to my own, and he clearly felt the same about mine. A few moments later, I was horrified to see him remove the delicate wooden block from the mouthpiece of my instrument, attack it with his penknife, and then replace it. The resulting sound, he insisted was greatly improved; my own immediate reaction, on playing it, was that he had ruined my treasured new instrument.

It took me a little while to appreciate that this had been a collision of aesthetic worlds. I had brought my own alien aesthetic baggage and perceptions with me to the rural Andes and had been confronted by a different set of values. It was unthinkable here to blow these flutes gently to produce sweet or mellifluous sonorities. Rather, the preferred sound aesthetic for *lawatu* flutes was a strident and vibrant quality which players termed *tara*. Not all fingering could produce this sought after pulsating multiphonic *tara* timbre, I was told, and players showed me how complex forked fingerings (rather than simpler open ones) were often more effective for producing this kind of pulsating and 'dissonant' timbral quality. As I noted in an early study of these flutes and their construction, *tara* "was almost an obsession" (*ibid.*, 64). I encountered this same obsession for *tara*, a few months later during the feast of Carnival in the nearby village of Calcha, when people played a larger version of the *lawatu* flute, called *saripalka* (Fig. 1).

---

<sup>12</sup> For more discussion of such musical cacophony see Stobart (2006b: 192-196) and Bigenho and Stobart (2018a: 1349-1354).

Although, the above account accurately conveys my emotions and experience at the time, it fails to mention that I was already familiar with producing *tara*-like multiphonic effects on the recorder and using forked fingering to do this; the so-called ‘extended techniques’ of experimental music. I will return to this theme again later. This experience in Yura was my first encounter with the concept of *tara*, but I quickly came to realise that this timbral characteristic was shared by certain other wooden flutes, including the much more widely played *tarka* – a name which presumably derives from *tara* (Fig. 2). My perspective on *tara* developed greatly when – during the early 1990s – I spent several years living in the rural Quechua-speaking community of Kalankira (Cayanguera), near Macha in the Northern Potosí region of Bolivia (Stobart 2006b).

### **A European Music Technology Adapted to an Andean Aesthetic?**

The *pinkillu*<sup>13</sup> flutes of Kalankira, also called *lawuta*, (from the Spanish *flauta*) are played during the rainy season throughout the Northern Potosí region. These wooden instruments are made in four to five different sizes, and bear a striking resemblance to a consort of Renaissance recorders (Figs. 3-4). Indeed, back in 1996 I suggested that the construction of these instruments was probably based on – or at least catalysed by – the recorder consorts introduced to the Andes in the early years of the European invasion (Stobart 1996b). As part of Spanish Christianisation policy designed to promote indigenous interest in the church through pageantry, the Third Lima Council (1583) recommended that each parish create a ‘chapel’ (*capilla*) of singers, and purchase recorders (*flautas*), shawms (*chirimías*) and other instruments (Turino 1991: 263). Documents attest the ownership of recorder consorts by many parishes, and Baker (2008: 166) suggests that the ‘chapels’ of four to eight singers possibly doubled up as instrumentalists. Guaman Poma includes a striking drawing of recorder playing *cantores* in his c.1615 chronicle (Fig. 5) and Garcilaso de la Vega mentions sixteenth-century indigenous recorder players performing polyphonic music from sight (Stevenson 1968: 277). Recorders may have alternated (or possibly doubled) voices, and – like other wind instruments – were probably mainly employed on feast days, reflecting Spanish church practices of the time (Kreitner 1992, 2003). In accordance with the Third Lima Council (1583) ruling, a 1591 document testifies that in Macha, the nearest small town to Kalankira, “today the holy sacrament is administered with the music of recorders and

---

<sup>13</sup> *Pinkillu* (with multiple variant spellings) means ‘flute’ in Quechua and Aymara. There are diverse forms of Andean flute, referred to with this word or its variants.

shawms with great veneration” (Platt, Bouysse-Cassagne and Harris 2006: 193; my translation).<sup>14</sup> Nearly 30 years later, in 1619, another official ordinance relating to Macha, specifies that the *pingollo* musicians who serve in these churches for “Indians” should be compensated for their service to the common good, which did not leave them time to work and earn money for tribute.<sup>15</sup> These two examples demonstrate that European-type recorders were being played in churches in the Northern Potosí region in the early colonial period, adding tantalising evidence in support of my earlier suggestion (Stobart 1996b) that today’s *pinkillu* flutes of this region might be, at least partially, based on Renaissance recorders (see Figs. 3-4). In this context it is also notable that the word used for recorders in the 1619 ordinance is *pingollo*, the Quechua word for ‘flute.’ Similarly, today, the term *pinkillu* – which has clear etymological resonances with *pingollo* – is used interchangeably with the Spanish-derived *lawuta* (*flauta*) to refer to the wooden flutes played in Northern Potosí.

If, as this brief historical diversion suggests, the construction of today’s *pinkillu* flutes is at least partially based on that of the Renaissance recorder consort, questions emerge regarding respective sound worlds. When recorders were played in the church in Macha around 1600, what kind of aesthetic world would have been expected? Nowadays, in Spanish, the ‘recorder’ is referred to as *flauta dulce* (‘sweet flute’), this added adjective – which began to appear in Spain in the 1700s (Lasocki 2001) – presumably evoking the kind of sound it was expected to produce.<sup>16</sup> Were indigenous recorder players in Macha in the 1600s, under oversight of a Spanish priest, similarly expected to produce a sweet sound from their instruments? We will never know, just as we cannot be entirely sure how they were sounded in Spanish churches at the time.<sup>17</sup> However, given that recorders were classified as *bas* (‘quiet/gentle’), rather than *haut* (‘loud’), in Medieval and Renaissance Europe (McGowan 1999), and tended to be played indoors, often in resonant spaces and in combination with

---

<sup>14</sup> “[...] *el día de hoy se administra el santo sacramento con música de flautas y chirimías con mucha veneración [...].*”

<sup>15</sup> “*Ordenanza 41. Item, porque en la dicha nueva retasa no van reservados de ella los alcaldes, regidores y oficiales de cabildo, y los fiscales, sacristanes y músicos pingollos que sirvan en las iglesias de los dichos indios, y que estos todos se ocupan y han de ocupar en el servicio y bien común de los demás, y así no les queda tiempo para poderse ocupar en trabajos y ganar sus tasas, y es justo que de sus trabajos se les decrezcan algún útil o provecho.*” (Platt, Bouysse-Cassagne and Harris 2006: 768-69)

<sup>16</sup> This also probably helped distinguish it from the transverse flute.

<sup>17</sup> What we do know is that today’s Early Music performers tend to aim for a sweet timbre when playing Renaissance recorder consort music. I regularly played with one such ensemble in the 1990s. During a rehearsal, shortly after returning from a trip to the Andes, I experimented with blowing a Renaissance-style (tenor) instrument with the same level of breath pressure used for playing *pinkillu* flutes in Kalankira. This resulted in a rich, dense, ‘dissonant’ sound, with vibrant *tara*-like multiphonics on certain fingerings. However, other members of the consort were horrified, angrily insisting I stop playing in this way immediately; as if doing so was abusing the music and might even damage the instrument.

instruments like the lute, harp or viol, it seems unlikely that they were blown as stridently as today's *pinkillu* flutes of Northern Potosí, which are primarily played outdoors.

Let us examine performance practices more closely. Renaissance recorders were typically played in polyphonic ensembles, with a separate line for each player, stressing the need to articulate and shape all the notes of a melody and to tune harmonic relations between individual instruments. In contrast to the polyphonic and harmonic nature of Renaissance recorder music, the *wayñu* melodies performed by *pinkillu* flute consorts are essentially monophonic, played together in approximate unison and octaves. However, it is common for players to miss out certain melody notes, or to extend notes (fingerings) that facilitate the production of a richer and more vibrant (*tara*) timbre. Indeed, as players negotiate the melody in different ways, each exploring the timbral affordances of their particular instrument, the effect is often of heterophony and interlocking. The important point here is that players' creative participation is driven by the pursuit of timbre, rather than by melodic shaping (Fig. 6). This focus on timbre is also evident in the categorization of the various size instruments in the *pinkillu* consort. These are divided into two types: *tara* and *q'iwa*, according to the sonority each produces on the final sustained note of each *wayñu* melody (Fig. 7). As I will discuss in more detail later, *tara* is vibrant with a multiphonic roll (acoustically 'dissonant'), whereas *q'iwa* is clear and thin (acoustically 'pure tone').

The question emerges: should we primarily understand European recorders' hypothetical transformation into today's *pinkillus* as adaptation to an existing 'ancestral' Andean aesthetic for vibrant timbre? Or, alternatively, should such modification be interpreted more in terms of shifting performance contexts? Namely, a move from polyphonic musical structures in relatively resonant indoor ecclesiastical acoustics, to homophonic (or heterophonic) musical structures in outdoor festive contexts in a high Andean environment, where there are few reflective surfaces and where sound tends to dissipate. In these latter contexts, flutes would need to be blown strongly to have an impact, where stridency and vibrancy in timbre contribute to acoustic presence (Stobart 2013a: 25-27). Of course, these two questions are not mutually exclusive, people would already have been aware that stridency and vibrancy of timbre were necessary for sounds to communicate effectively in open outdoor spaces. However, implications surround the framing of such adaptation as respectively driven by 'ancestral aesthetic' or 'acoustic environment.' While the two are arguably interdependent, the latter prompts us to keep interrogating contexts and thus avoid essentialising vibrant timbre as a characteristic of *lo andino*. My point here concerns the danger of overgeneralisation and of too easily embracing imagined long-term

continuities; it is certainly not to deny pre-Hispanic precedents. Indeed, back in 2006, in the context of discussing the *tara* timbre of *pinkillu* flutes, I wrote: “This aesthetic for vibrant timbre appears to be widespread and very ancient in South America and has been achieved through exploiting a range of technologies” (Stobart 2006b: 215). But now let us turn to other case studies and scholarship on the theme of vibrant timbre which also bring out these diachronic and wider cross-Andean connections.

### **‘Torn Sound’ - *Sonido rajado* – the *Baile Chino* of Chile**

Perhaps the best-known example of pulsating ‘acoustic dissonance’ in South America is the *baile chino* tradition of central Chile. This has been richly documented by José Pérez de Arce, Claudio Mercado and Agustín Ruíz, among others, and in 2014 the *baile chino* was inscribed in UNESCO’s Representative List of the Intangible Cultural Heritage of Humanity – Chile’s first cultural expression to receive this recognition (Izquierdo 2018). The energetic and acrobatic *chino* dancers play flutes (*flautas*) which produce a “strong, intense, complex and energetic dissonant sound” referred to as *sonido rajado*, literally ‘torn sound’ (Pérez de Arce 1998: 17). *Chino* flutes take the form of a single wooden tube, closed at the lower (distal) end, played in the manner of a panpipe or notched flute and blown very strongly. The production of the vibrant *rajado* sound results from the flute’s complex tube construction, which incorporates two even length cylinders of different diameters; wider above, narrower below (Fig. 8). In the “dissonant cluster” produced by each flute, neither a fundamental nor a defined tone can be recognized from the rich high to low pitch spectrum (*ibid.*, 26). A *baile chino* group typically comprises some twenty flute players, organized in pairs who dance in two parallel lines, coordinated by drums, whose players also lead the choreography. The two lines of flute players continuously alternate cluster chords with each other, each side using similarly graduated sizes of instrument that further emphasize the sense of ‘dissonance.’

In May 2019, I had the great fortune while staying in Chile to be invited by Claudio Mercado to participate in the *baile chino* group of the village of Pucalán, for a patronal festival involving the local church and a nearby shrine.<sup>18</sup> Claudio Mercado has been closely involved with this group for several decades, a personal investment that goes far beyond scholarly interest. Indeed, I was struck by both his profound personal commitment to the group and the deep sense of mutual affection in his interactions. For me, the experience of participating as a dancer-flute player in the group was exhilarating, physically exhausting,

---

<sup>18</sup> Pucalán is situated quite near Valparaíso and around an hour’s drive from Santiago.

and enormously enjoyable, as well as challenging on several different fronts. On the one hand, this involved coordinating rapid, energetic and acrobatic moves with the other dancers, while following the drummer's frequent changes in choreography. On the other, it necessitated directing intense and powerful bursts of breath at the sharp edge on the flute's upper end, with the correct embouchure, in order to produce the vibrant *rajado* sound (Fig. 9). I did not always achieve this, but when I did and managed to coordinate with the other players, there was a deeply satisfying sense of abundance as the sound and its vibrant energy expanded – as if hitting a 'sweet spot' or resonance. When I managed to sustain this, entering a kind of groove – as my body movements and the sounds I was producing entrained with those of the other dancers – I sometimes experienced a shift of consciousness, suggestive of that so evocatively described by Claudio Mercado in his 1996 article "*Detrás del sonido, el mundo*" ("Behind the Sound, the World"). This search for sonic vibrancy, and the feeling of sensorial abundance or multiplicity encountered with the full-throated *rajado* sound, was reminiscent of the obsession for producing *tara* sound I have encountered among *pinkillu*, *lawatu* and *tarka* flute players in Bolivia.

### **Pre-Hispanic Panpipes and *Pifilcas***

The growth in interest in the *baile chino* traditions, especially since the 1980s, would appear to have been underscored – or even ignited – by archaeological research into pre-Hispanic musical instruments. For the case of Pérez de Arce, Mercado and Ruíz, this is hardly surprising given that all three were employed by the Chilean Museum of Pre-Columbian Art (*Museo Chileno de Arte Precolombino*), which includes a number of lithic panpipes and *pifilcas* in its collection. The word *pifilca* is a Mapuche term for flutes, resembling those of the *baile chino*, which they play in distinct performance traditions in southern-central Chile. Music archaeologists have applied the term *pifilca* (*pifilka*) to a range of primarily lithic pre-Hispanic single-tube flutes.<sup>19</sup> These may consist of simple (single diameter) or complex (multiple diameter) tubes, and the distal end of the tube may be closed or open, potentially serving as a finger hole – as in the case of certain specimens from northern Chile (Grebe 1974: 39).

A number of archaeological examples of lithic or ceramic panpipes and *pifilcas* with complex tubes, resembling those of today's *baile chino*, have been encountered in widely

---

<sup>19</sup> Exceptionally, Grebe (1974) also mentions some double-tube *pifilcas*. It is possible that other scholars would classify these as panpipes.

scattered sites across the southern Andes (Pérez de Arce 1998; Gérard 2015: 49-50). The presence of this complex tube geometry has been identified as a key indicator of the presence of a pre-Hispanic aesthetic for vibrant timbre or *sonido rajado*. Exceptional levels of early craftsmanship are evident in some of these instruments, suggesting high status, specialised knowledge, and intentionality, as regards construction, acoustics and aesthetic preference.<sup>20</sup> For example, Fabre, de la Cuadra and Pérez de Arce (2012: 329), in their study of a beautiful four-tube soapstone (*Combarbalite*) panpipe of the Acocagua culture (MCHAP-MAS 0073), suggest that this instrument – which they refer to as an *antara* – and its *sonido rajado* would have been reserved for important personages. They also asked Guillermo Díaz, one of the lead *baile chino* players from Pucalán, to try out the instrument. He successfully obtained *sonido rajado* from all four tubes and confirmed the exceptional quality of the instrument (*ibid.*, 336). It was such experiences which, evidently, inspired the authors to write: “*sonido rajado* endured, passing the generations, up to the *bailes chinos* of today” (*ibid.*). Similarly, Claudio Mercado in his article “*Con mi flauta hasta la tumba*” (“With My Flute to the Grave”) observes that this vibrating multiphonic and ‘dissonant’ timbre, produced by the multiple internal diameters of the Acocagua *antara*, “dominates the aesthetic of Andean flutes. This is the so-called *tara* sound, the *rajado* [‘torn’] sound” (2005: 31, my translation).<sup>21</sup>

In several fascinating studies, José Pérez de Arce has shown how examples of complex tube panpipes can be traced back to around 100 BC to the Paracas culture of the Peruvian coast. He identifies a chronological sequence of widely disseminated examples of complex tube panpipes passing via Nasca, Tiwanaku and Atacameño culture, among many others. In this trajectory, *pifilcas* with single complex tubes – including many examples from central Chile – appear to have arrived somewhat later on the scene, mainly after AD 1000 (Pérez de Arce 2000).<sup>22</sup> In short, knowledge of complex tube technology appears to have been widely disseminated around the Andes region. As Pérez de Arce notes, when earlier researchers, raised with a “Western attitude to music,” studied these instruments their experiments “usually resulted in the production of normal diatonic scales and melodies” (*ibid.*, 235). The results proved very different, he observes, when these instruments were

---

<sup>20</sup> Fabre *et al.* (2012: 326) mention that the Southern Andean *antara* made its appearance with the millennial Tiwanaku tradition (AD 300–1,100), and gradually expanded southwards.

<sup>21</sup> “*Domina la estética de las flautas de los Andes. Es el llamado sonido tara, el sonido rajado.*”

<sup>22</sup> This suggestion that multiple-tube panpipes pre-dated *pifilcas*, contrasts interestingly with Ester Grebe’s earlier observation that “it is possible to appreciate that single and double [tube] *pifilcas* prepared the way for lithic panpipes of three or more tube” (1974: 40; my translation). (“*es posible apreciar que las Pifilkas simple y doble preparan el camino a la flauta de pan lítica de tres o más tubos.*”)



approached using the playing techniques of the *chinos*. Indeed, when we witness examples – such as Claudio Mercado and other colleagues demonstrating these instruments – the results are immensely compelling.

Research into complex tube panpipes and *pifilcas*, and into the vibrant ancient sound worlds they suggest, is hugely exciting. However, I suspect – based on an admittedly cursory survey – that complex tube examples represent a relatively small proportion of the archaeological record. Even if influential and widely disseminated, they probably need to be interpreted alongside other diverse forms of construction and sonorities. In this context, it is notable that today in the region of Calcha (Potosí, Bolivia), single tube, open-ended two-tone wooden pipes called *jantarka* (*jant'arki*) are played by women, sometimes in combination with men's large *tara-rich saripalka* flutes (see Fig. 1). The different size *jantarka* produce two tones, approximately a minor third apart, through opening and closing the hole at the distal end of the instrument.<sup>23</sup> Compared to the complex tubes and *sonido rajado* of the *chino* flutes, *jantarka* flutes usually consist of a single diameter ('simple') tube and their sound is relatively mellow, as may also be heard from field recordings (Martinez 2000). This leads us to question the quality of sound that might have been produced in the early 1600s by a group of seemingly similar instruments depicted by Guaman Poma (1936 [c. 1615]: 324). As part of this chronicler's section dedicated to "*Canciones i mvusica*" ("Songs and Music"), this drawing features a feast of the *Colla suyo* (the southerly quarter of the Inca empire). It shows a large group of men playing instruments resembling *jantarkas*, accompanied by a woman playing a large drum attached to a frame (Fig. 10). Nonetheless, we have no way of telling whether something equivalent to the intense acoustic 'dissonance' of *sonido rajado* or some other sonic aesthetic, nearer today's *jantarkas*, would have been prioritised.

### **Double Chamber Whistles and Global Perspectives**

In her book on music in Nasca culture, "*Detrás del silencio*" ("Behind the Silence"), Anna Gruszczyńska-Ziółkowska dedicates a section to "The tradition of Dissonance in Andean Music" (2014: 166, my translation).<sup>24</sup> The conclusions of multiple different researchers are clear, she observes, "dissonance is highly valued in Andean music, the types of consonance are planned and are 'remembered' in the construction of the instruments ..." (*ibid.*; my

---

<sup>23</sup> See Baumann 1982; Stobart 1988; Cavour 1994: 180-84, 2005: 81; Martinez 2000: 24.

<sup>24</sup> "*La tradición de la disonancia en la música andina*"

translation).<sup>25</sup> As well as encountering complex tubes, of multiple internal diameters, in the ceramic Nasca panpipes she analyses, she also discusses several ceramic double chamber whistles (for a similar example see Fig. 11a-b). These whistles consist of two tiny chambers of slightly different internal volume, each with a duct mechanism; when blown, two sounds of slightly divergent pitches are produced. This creates difference beats, and thus a pulsating ‘dissonant’ sound (*ibid.*, 58). Many examples of double chamber whistles or flutes, constructed according to similar principles, have been found in other pre-Hispanic Andean cultures (Gérard 2009: 135-140) as well as in other parts of South America and Mesoamerica (Olsen 2002: 101-10; Gudemos and Catalano 2009).

At this point it is interesting to note that these kinds of whistles make a surprisingly similar sound to those used by sports referees today, which are often presented as a relatively recent invention. A design enclosing a dried pea, which vibrates to create a pulsating roll effect, was developed and manufactured in England by Joseph Hudson in England in the 1880s.<sup>26</sup> However, this has since been eclipsed by a double chamber whistle patented in 1998, which uses principles identical to those of ancient South American cultures.<sup>27</sup> Whether this so-called ‘Fox 40’ whistle, developed by Canadian Ron Foxcroft, was an independent discovery or inspired by South or Central American double-chambered whistles remains unclear (Fig. 12a-b).<sup>28</sup> The important point to stress here is that a pulsating effect, respectively a roll produced by a dried pea or ‘dissonance’ beating by double chambers, serves to greatly amplify the sound and extend the distance it can travel. This is clearly an important consideration for certain forms of acoustic space, for example when sounded outdoors on a sports field.

From a global perspective, instruments designed to produce two sounds at slightly divergent pitches, in order to create a vibrant beating effect, are certainly not unique to the Andes, nor the Americas. Reed-powered musical instruments, consisting of two pipes of slightly differing lengths with two sets of parallel fingerholes which are played at the same time, have been documented in various regions, such as the Mediterranean, Middle East and China. Examples include the *xeremie* of Ibiza (Balearic Islands), the *zamr* or *zammāra* of

---

<sup>25</sup> “*la disonancia es altamente valorada en la música andina, los tipos de consonancia están planificados y son «recordados» en la construcción de los instrumentos.*”

<sup>26</sup> The first whistle to be developed was called the ‘Acme Thunderer.’ Following an 1884 contract with the British police, Hudson’s company went on to produce whistles for the police, railways and sports throughout the British Empire. See <https://www.acmewhistles.co.uk/whistles-accessories/acme-classics/acme-thunderer>

<sup>27</sup> US Patent US5816186A.

<sup>28</sup> No acknowledgment of inspiration from ancient technology appears in the patent documentation. See <https://patentimages.storage.googleapis.com/ac/d2/1a/8ead98483dbbf4/US4821670.pdf> (Accessed 5.12.2020).

Morocco (Fig. 13), the *ney anban* of Iran (a form of bagpipe), and the *qiang* of Sichuan, China (which is claimed to have roots in the Song Dynasty, AD 960-1279). However, flutes designed in this way, or incorporating *chino*-type complex tubes, are conspicuous for their apparent absence from my perfunctory survey. Nonetheless, an aesthetic for buzzing effects is common in many parts of the world. For example, Thomas Turino notes a sub-Saharan African “preference for dense overlapping textures and ‘buzzy’ timbres” (2015: 202), even though this has declined in recent decades “in favour of a ‘cleaner,’ more ‘Western’ aesthetic” (Driver 2017). African techniques to create these kinds of buzzing or rattling effects have included attaching vibrating membranes (mirlitons) to the gourd resonators of xylophones, metal rattles to string instruments, or shells or bottle caps to *mbiras* and to their gourd resonators (Berliner 1993: 11-12; Dutiro 2007: 5; Driver 2017). Nonetheless, globally, Latin America remains notable for its diversity of flute types, and for its wide diffusion of pre-Hispanic ceramic depictions of musicians and ceramic sound-making objects; a proportion of which appear to have been designed to produce buzzing or beating sounds. It is also notable that this highly advanced ceramic-focused craft tradition largely disappeared following the European invasion (Pérez de Arce 2006: 8).

### **Participatory Discrepancies?**

In his oft-cited article “Participatory Discrepancies and the Power of Music,” Charles Keil claims: “Music, to be personally involving and socially valuable, must be ‘out of time’ and ‘out of tune’” (1987: 275).<sup>29</sup> Among his ‘out of tune’ examples, he mentions the paired instruments of Tibetan monastery ensembles, as “perhaps the paradigmatic instances of pitches juxtaposed or rubbed against each other,” but also the “pairs of wet-tuned reeds in a button box accordion or concertina” (*ibid.*, 278). Indeed, according to Mark DeWitt, cajun accordion players in the United States often prefer ‘dry tuning,’ where paired reeds are tuned identically. By contrast, zydeco musicians tend to favour ‘wet tuning’ where paired reeds are tuned ‘slightly off’ from one another “to produce acoustical beating, giving the effect of a vibrato” (DeWitt 2012: 54).<sup>30</sup> Keil also describes how jazz players talk about the “out of tune

---

<sup>29</sup> Keil’s argument is thought-provoking, even if the implication of an underlying normative ‘in tune’ standard, against which such discrepancies are juxtaposed, should be questioned.

<sup>30</sup> The terms ‘wet’ and ‘dry’ in this context presumably reflect a similar distinction to that between reverberant (wet) and non-reverberant (dry) acoustics. Whereas wet tuning’s tremolo effect is arguably more suitable for sentimental styles – where fullness of sound and a ringing sonority is desired –, dry tuning might appear more appropriate for styles where clarity of articulation is favoured. Accordingly, wet (or discrepant) tunings might be prioritised as a means to compensate for dry (non-resonant) acoustic contexts, whereas dry tunings would compensate for wet (reverberant) acoustic spaces.

‘edge’ to the ‘tone’ of [particular] players” and how the tubes of organ pipes are deliberately “untuned a bit for better resonance” (Keil 1987: 278). Other examples abound, such as paired Balinese gamelan instruments tuned to slightly different pitches to create a ‘shimmering’ effect, or the *ganga* singers of the Bosnian highlands who use narrow microtonal intervals between their voices (Greene 2019: 197).

Paul Greene (2019) has stressed how much the acceptable frequency range for a tone to be classed as ‘in tune’ varies across cultures. While this is quite narrow for the Nepalese Newar musicians he has studied, among Zimbabwean Shona musicians the pitch range can vary considerably and still be considered ‘in tune’ (*ibid.*, 197). This latter tendency or aesthetic for ‘wide unison’ tuning to create a beating effect and dense ensemble texture, has been identified by Thomas Turino (2008: 45) as a characteristic of participatory styles of musical performance. This timbral density may facilitate the blending of individual instrument sounds with the rest of the group, enabling neophyte or less accomplished players to participate alongside experienced ones with little fear of mistakes being noticed or detracting from the whole. Tuning discrepancies (‘acoustic dissonances’) might thus be seen to contribute to social harmony. A paradigmatic example, which informed Turino’s theorizations about participatory and presentational styles of performance (2008), are the rural wind ensembles of Conima, Peru that he studied in the mid-1980s. As he notes in his 1993 book, “Moving Away from Silence,” “tuning variance for any given unison or octave [...] is fundamental to the distinctive color of indigenous Andean wind ensembles” (Turino 1993: 44).

The above global foray is intended to highlight that ‘wide’ or discrepant tuning is not unique to the Andes, where according to Arnaud Gérard “the totality of ethnic Andean *siringas* [panpipes/reed instruments] that are played in consorts display the phenomenon of beating or pulsations” (1999, I: 162; my translation).<sup>31</sup> The ways in which such discrepancies have been achieved by Aymara panpipe and flute artisans, however, is striking. As documented by Gérard Borrás (1998), families of *luriri* (‘instrument makers’) from Walata Grande (La Paz, Bolivia) traditionally used measuring sticks, called *tupu t’isi*, to measure tube lengths and the placement of finger holes. When cutting panpipe tubes, tuning discrepancies sometimes resulted in quite arbitrary ways; the *tupu* providing a rough measure of the outside length of bamboo tubes (Hachmeyer 2020). However, according to Borrás,

---

<sup>31</sup> “[...] la totalidad de las siringas andinas étnicas interpretadas en tropas presentan el fenómeno de batimiento o pulsaciones.”

more carefully planned discrepancies can be recognized in the case of the *koyko* flute. Here, the *tupu* measuring stick includes two sets of notches, indicating finger hole placement, each around 2-3mm apart. This was explicitly designed to provoke beating when the two sets of flutes were played together (cited in Gérard 2009). According to Borrás' consultants these discrepancies gave the music 'flavour' (*sabor*) or a 'tang' – "it tastes like lemon" ("*así sabe como a limón*") (Borrás 1998: 42). On similar lines, Arnaud Gérard has described how a group of rural players once tried out, but chose not to purchase, a set of *sik'u* panpipes he had made and precisely tuned to equal temperament. The instruments, the players assured him were 'good,' but '*q'ayma*' – a Quechua word meaning 'insipid' or 'tasteless' (Gérard 2009: 126). Thus, for these rural Andean players, tuning discrepancies were deemed necessary to give the music 'zest,' thereby making it 'in tune' or harmonious.

As many scholars working on Andean rural music have stressed, it is not a case that artisans "do not know how to tune" (Borrás 1998; my translation),<sup>32</sup> but that consorts of wind instruments were intentionally made to incorporate tuning discrepancies. I use the past tense here because artisans are increasingly producing so-called 'professional' style instruments that are tuned precisely with one another (i.e., without discrepancies), often using an electronic tuning meter, and which conform to an equal tempered diatonic scale. Borrás noticed this tendency in the 1990s, when *luriri* were starting to produce two types of instruments which, respectively, he termed "Western tuned"<sup>33</sup> and "Amerindian tuned"<sup>34</sup> (1998: 43, my translation) – a distinction to which I will shortly return. This practice has become increasingly prevalent as revealed in recent research among *luriri* from Walata Grande by Sebastian Hachmeyer (2020). Hachmeyer has measured these contrasting modes of tuning for the case of two Qantu panpipes. One panpipe was precisely tuned to an equal-tempered diatonic scale by a *luriri* from Walata, using an electronic pitch meter, thereby endowing it with a professional aura (Hachmeyer 2018: 16-20). For the other, made in the village of Niñocorin using a *tupu* measuring stick, the tuning is intentionally inexact or 'chaotic' (Fig. 14), presumably giving rise to the kind of timbral 'zest' described above.

### **Pulsating 'Dissonance' in Discourse and Practice**

Over the preceding pages I have introduced a range of examples of beating, vibrancy, multiphonic roll, or undulating sonorities produced by different forms of Andean flutes, both

---

<sup>32</sup> "*no saben afinar*"

<sup>33</sup> "*occidentalement juste*"

<sup>34</sup> "*amérindiennement juste*"

encountered today and suggested by pre-Hispanic forms of construction. Some of these examples have been placed in a broader global context, enabling us to identify both widely shared and more regionally distinctive tendencies. Arnaud Gérard (2009, 2015) has identified some fascinating continuities in the physics underlying how these diverse – contemporary and pre-Hispanic – forms of Andean flutes produce their beating sonorities. In a nutshell, he relates this to the placement of two tubes, chambers, or diameters of slightly diverging size adjacent to one another, which when sounded interact to cause pulsing acoustic disturbances. Knowledge that juxtaposing two parts, which are – at the same time – both similar and a little different, would generate pulsating or vibrant sounds, he suggests, was widely disseminated through the Andes from “the remotest archaeological times”<sup>35</sup> (2009: 133; my translation).<sup>36</sup> He goes on to relate this to my work on the concept of *tara*, which my Bolivian hosts in Kalankira described to me as ‘mixed,’ ‘two sounds’ or something which sounds with ‘two mouths’ (Stobart 1996a: 70). However, as Gérard thought-provokingly observes, one does not hear two sounds in the beating and multiphonic sounds of, for example, a *tarka* or *pinkillu* flute, leading him to hypothesize that *tara* does not refer to two sounds *per se*. Rather, “to achieve a vibrant sound, *two tubes* were originally needed (‘two mouths,’ Stobart was told), either *separated* (beating), or *joined* (multiphonic with roll effect)” (Gérard 2009: 135; my translation and emphasis).<sup>37</sup>

Arnaud Gérard makes a compelling case, from a physics perspective, for acoustic continuities between the ways that different types of Andean flutes produce a pulsating timbre. What perhaps is less clear is whether players and makers themselves identify a similar sense of continuity between the sonorities and sound production characteristics of these various flutes. In the case of rural panpipe ensembles, we have heard how tuning variance was seen to contribute to the ‘zest’ or ‘flavour’ of the sound, whereas precisely tuned unisons, octaves, and 5ths (without discrepancies) were considered *q’ayma*, ‘insipid’ or ‘flavourless.’ However, in my own experience of playing with rural panpipe ensembles, tuning variance appeared largely implicit. I have no recollection of players actively seeking to produce a beating sonority. Also, we might wonder whether the use of tuning variance to create “an extremely dense sound quality – rich with overtones and combination tones”

---

<sup>35</sup> “*Los tiempos arqueológicos más remotos*”

<sup>36</sup> In an earlier article Gérard (1997) hypothesized a potential evolutionary logic to these developments (from paired tubes, to divergent internal diameter tubes, to flutes with finger holes – such as the *tarka* – with divergent internal diameters) but later retracted the idea of a sequence (2009: 133-134).

<sup>37</sup> “*para lograr un sonido vibrante, originalmente se necesitaba de dos tubos (‘dos bocas’, le decían a Stobart), ya sean separados (batimiento), ya sean empalmados (multifonías con redoble)*”, (Gérard 2009: 135).

(Turino 1993: 44), is perceived to have continuities with producing a pulsating multiphonic sound, like *tara* – a word I do not remember hearing in the context of panpipe timbre.<sup>38</sup>

However, I should stress that my own experience is largely restricted to the Potosí region of Bolivia, and thus should not be seen as representative.

In the case of playing duct flutes, such as *lawatu*, *pinkillu* and *tarka*, I encountered an explicit and very active desire to produce the vibrant multiphonic *tara* timbre. As noted above, for some players it was “almost an obsession.”<sup>39</sup> Certain fingerings were more effective for producing *tara*, as fellow players often pointed out to me, and it was common to adjust instruments or wet their interior, with water or alcohol, to help provoke it. Similarly, in my brief experience playing flutes with the *baile chino*, the need to produce a rich vibrant and dense multiphonic sound was a constant concern and made highly explicit. Indeed, flutes were periodically wetted with water or alcohol, as are *pinkillus* and *tarkas*, specifically to provoke *sonido rajado* (‘torn sound’).

I am unaware of whether the *sonido rajado* sound of Chilean *chino* flutes is alternated with other types of instruments and sonorities according to a seasonal or religious calendar. However, in many rural communities of the Bolivian and Peruvian highlands, instruments and their associated sonorities are (or were) commonly alternated according to seasonal calendars, often linked with agricultural activities and Catholic feasts. Whereas panpipes and notched flutes have tended to be confined to the cold winter months (April to October), duct flutes that produce the *tara* sound are largely played in the rainy growing season (November to March), and most especially during the festival of Carnival (February or March). In this part of the Andes, Carnival – as the culmination of months of agricultural labour – marks the climax of the growing season. It is a festival of sensory abundance, celebrated with flowers, games and tasting the new fruits of the year (Stobart 2006b: 248). That the rich vibrancy of *tara*, as an extreme expression of sonic abundance, should dominate the soundscape during the feast of Carnival is perhaps no surprise.<sup>40</sup> Thus, although tuning variance appears to have been a generalised characteristic of rural Andean wind consort music through much of the twentieth century, in practice the *tara* sound has usually been constrained to particular times

---

<sup>38</sup> However, I did encounter particular sizes of *julajula* panpipes occasionally referred to as *tara* or *taran*. This may be because *tara* is also applied to instrument size (as well as sonority) in the case of *pinkillu* flutes.

<sup>39</sup> Elsewhere, different names are used to refer to this vibrant *tara*-type timbre. For example, for the case of *tarka* flutes in La Paz Department, Bolivia, I heard it referred to as *chiri chiri* (Walata Grande), and Ernesto Cavour reports the use of the term *richas* (Cavour 1994: 105; Gérard 2010: 89).

<sup>40</sup> This point is made especially explicit in Arnaud Gérard’s pioneering two volume edited collection “*Diablos tentadores y pinkillus embriagadores...*” of 2010.

and contexts. In other words, through the course of any given year *tara* has tended to be alternated with a diversity of other timbres.

There is striking archaeological evidence for the existence of pre-Hispanic panpipe- and *pifilca*-type complex tube flutes constructed, presumably, to facilitate the production of vibrant and ‘dissonant’ *rajado*-type sound. However, it is difficult to ascertain whether these sounds were alternated with others, according to context and/or season. Similarly, in the archaeological evidence for collective flute performance – where complex tubes and tuning variance may have been part of the picture (Pérez de Arce 2018; Gruszczyńska-Ziółkowska 2014; Gérard 2015: 54) –, we should probably be careful not to assume that players necessarily viewed tuning variance and *rajado*-type timbre as the same thing, any more than do rural musicians today. My suspicion – as noted above – is that complex tube flutes (and double whistles) probably represent a relatively small proportion of the diverse flute types included in the archaeological record. Contextual evidence suggests that lithic or ceramic complex tube flutes were sometimes of high prestige and ritual importance, and that construction knowledge was widely disseminated across the Andean region (Fabre *et al.* 2012). But, how often and to what extent did the distinctive timbre of these, sometimes prestigious, complex tube flutes dominate the soundscape? Were their particular sonorities confined to specific ritual, social and acoustic contexts, and – if so – how might they have been alternated with other kinds of sounds and contexts? My provocation here is to open our ears to other types of sonorities beyond pulsating ‘dissonance.’ However, there are compelling reasons, as I will now argue, why we might find ourselves emphasizing – even exaggerating – the diachronic importance of vibrant beating timbre or acoustic ‘dissonance;’ a tendency to which I am also susceptible.

### **‘Amerindian Tuning’ and the Ideological Ear?**

In an era in which decolonization is very much in the air, there would appear to be strong grounds for making a case for what Borrás (1998: 43) has called “Amerindian tuning,” and resisting what might be seen as culturally invasive “Western tuning.” Perhaps this same ideological position on tuning systems was in the back of my mind during a trip to La Paz in June 2019, when I commissioned a *luriri* from Walata Grande to construct me a consort of Italaque-style *sikuris* (Fig. 15). In my instructions, I specifically requested that when making the instruments he use *tupu* measuring sticks, rather than an electronic tuning meter. In other words, I wanted the instruments to employ “Amerindian,” rather than “Western,” tuning – in Borrás’ terms. The *luriri* was perfectly happy to follow these instructions, but I later began to



reflect on how this tall eccentric gringo's request might have sounded to him, and on its wider implications.<sup>41</sup>

Today, groups of panpipe players from the countryside often specifically request 'professional' instruments made using an electronic tuner. This links into the way that, through decolonisation processes in Bolivia, these groups of musicians increasingly wish to be recognized as 'professionals,' with equivalent status to, for example, brass band musicians. Thus, on the one hand we see local 'tradition bearers' seeking to acquire recognition as musicians; skilled specialists, rather than mere *comuneros* ('community members'), who occupy an equal footing with other types of professional musicians. This status is presumed to offer more opportunities for professional engagements, which may take on an increasingly presentational aspect for which less experienced or neophyte players are unwelcome (Hachmeyer 2018). Thus, 'professional' tuning has become connected with what Turino (2008) has called "presentational performance," a style more geared to engaging and entertaining an audience.

By contrast, my own experience of rural Andean music performance – like that of many other scholars – has tended to emphasize and value its participatory, inclusive and collaborative nature (see also Pérez de Arce 2020: 145-146). We might see this to be, in part, manifested by both tuning discrepancies and, for example, panpipe interlocking technique. However, Michelle Bigenho's comments regarding the "research fetish for interlocking technique," so often replicated in "urban-based attempts to represent the most authentic indigenous performance," has obvious resonances with tuning discrepancies. Both would seem to carry what she refers to as "a heavy symbolic load of collective cooperation as expected of the properly authentic indigenous community" (2002: 39). In other words, we can easily find ourselves projecting our own social values or utopian desires on to other cultures or their imagined pasts. Returning to Starn's critique of *lo andino*, we see a tendency for scholars to value what we perceive as indigenous and authentic, especially if there is evidence that this might be underscored by pre-Hispanic precedent (Starn 1991; Frith 2000). At the same time, we often share a desire to respect and promote indigenous forms of knowledge, such as those connected with *tupu* measuring sticks and "Amerindian tuning," which have so often been marginalised, suffered prejudice or been dismissed as 'ignorance'

---

<sup>41</sup> This *luriri* was recommended to me by my *compadres* (I am godfather to their daughter), another instrument-making family also originally from Walata Grande, who have been friends for over thirty years.

(Hobart 1993). Building on this tension, let us now delve more deeply into the attraction of the idea of ‘Amerindian tuning’ or Andean vibrant timbre as ‘acoustic dissonance.’

### **Decolonising Dissonance: Social Constructions of Consonance and Dissonance**

Fabre, de la Cuadra and Pérez de Arce have observed how “Western music of European origin” has, almost obsessively, privileged pitch above other parameters, where a “tempered pitch system” has formed the foundation of its aesthetic evolution. They go on to observe:

“The pre-Hispanic American sound scene, on the other hand, seems to have opted for a different hierarchy, where timbre together with intensity acquire a privileged place. Examples of this choice are the ‘tara’ sound, typical of instruments such as tarkas and sikus, and sonido rajado.” (Fabre *et al.* 2012: 330; my translation)<sup>42</sup>

These words convey a sense of advocating for a vibrant, acoustically ‘dissonant’ sonic solidarity – as a characteristic of the pre-Hispanic Americas (not just the Andes) and its ‘surviving’ indigenous populations – in the face of a pitch-obsessed “Western music of European origin.” This is a seductive idea, and again suggests a kind of decolonising move, where ‘authentic’ deep-rooted Amerindian acoustic vibrancy and ‘dissonance’ appear as an alternative and form of resistance to imaginaries of hegemonic and colonising European-derived consonance or functional harmony. However, such forms of opposition and generalisation also risk creating “West and the Rest”-type binaries (Brusila 2001), where –in both cases – aesthetic diversity is reduced and essentialised, as if somehow singular or unified.

Nonetheless, there is good reason to question how individuals’ experience of musical consonance and dissonance are socially constructed, as well as to contextualise the physics-derived concept of acoustic dissonance itself. It is no surprise that the vibrant sonorities of some rural Andean flutes are perceived as ‘harsh’ or ‘dissonant’ by outsiders; many are literally ‘dissonant’ from an acoustics perspective (Stobart 2006b: 214). Even though ‘dissonant’ is a technical term in physics, its broader semantic space in English suggests disagreement or inharmonious relations between things or people.<sup>43</sup> By contrast, the Quechua/Aymara word *tara*, which refers to a vibrant sonority that, for example, Europeans might perceive as ‘dissonant’ conveys notions of harmonious social relations. For example,

---

<sup>42</sup> “La escena sonora americana prehispánica, en cambio, parece haber optado por una jerarquía diferente, en donde el timbre junto a la intensidad adquieren un sitio privilegiado. Ejemplos de esta elección son el sonido ‘tara’, propio de instrumentos como las tarkas y sikus, y el sonido rajado.”

<sup>43</sup> Similar semantic space is suggested by the Spanish equivalent, ‘disonante.’

friends in Kalankira related *tara* to two people walking together and to ideas of abundance. However, people in Kalankira also distinguished the vibrancy and abundance of *tara* from the acoustically ‘pure,’ or ‘fluty,’ clear and thin sonority of *q’iwa*, which lacks *tara*.<sup>44</sup> The semantically complex concept of *q’iwa* was related to inharmonious or dissonant relations between people or things, such as a person who is miserly, or an object or person that does not easily fit with others. For example, a misshapen brick that is difficult to fit with others when building a wall.

To summarise, for the people of Kalankira at least, *tara* (acoustic ‘dissonance’) was connected with harmonious relations, suggesting abundance and the effective exchange or redistribution of energies. By contrast, *q’iwa* (acoustic pure tone) was associated with social dissonance, as scarcity and a failure to exchange or redistribute energies. In this juxtaposition, we again see dominant conceptualisations of musical consonance or dissonance thrown into question. Pure ‘fluty’ (*q’iwa*) tones, which would be very at home in many forms of pitch-focused “Western music of European origin,” would presumably be heard as lacking or inharmonious by these rural Andeans when playing *pinkillu* flutes, just as the vibrant and abundant sonorities they produce from specific (*tara*) fingerings would be perceived as ‘dissonant’ by Europeans. However, as I will discuss later, this apparent tendency to privilege *tara* (abundance, vibrance), should not lead us to interpret *q’iwa* as irrelevant.

### **The Invention of Andean Timbre?**

The idea of (harmonious) ‘dissonant’ and pulsating timbre as a sonic characteristic Andean or Amerindian cultures has striking similarities with what Kofi Agawu (1995) has called the “invention of ‘African rhythm’.” He argues that the pioneering music scholarship of the 1950s, which led ‘African music’ to be construed as “an essentially rhythmic phenomenon,” was shaped by “an overriding ideology of *difference*” (*ibid.*, 395). Research interest in Andean pulsating ‘dissonance’ might similarly be seen to have been shaped and motivated by ideas of difference, even if we might resist calling this an ideology. As Agawu reminds us: “When was the last time an ethnomusicologist went out to discover sameness rather than difference?” (*ibid.*, 389). Indeed, disciplinary reward structures and publishability criteria tend to be underscored by a predilection for the exotic and predisposition towards depicting cultural difference (Keesing 1987, 1989). For all the main researchers of Andean pulsating

---

<sup>44</sup> As noted above, both these sonorities can be produced by a single *pinkillu* flute and are linked with specific fingerings (Stobart 1996a: 70, 2006: 211).

‘dissonant’ timbre, this phenomenon – at some level – has initially been experienced as a cultural Other. It has challenged our prior – usually European-heritage-derived – musical-aesthetic experience, even if we have subsequently come to value, embrace or advocate for it.

Thus, part of the attraction of the idea of pulsating timbre is precisely the counter-hegemonic way that its ‘dissonance’ contests and unsettles dominant European-derived musical aesthetics and values. This allure is further intensified by an aura of insurgency, where a seemingly marginalised sound world (often denigrated as ‘noise’) is pitted against a presumed universal (Western) musical ordering. However, any such dichotomy also depends on a narrow and essentialised construction of so-called ‘Western music,’ and it is probably important to remember that such rebelliousness and its embrace of ‘noise’ has striking parallels with traditions of experimental art music. Just as the crystalline sound world of contemporary Early Music performance might be seen to be grounded in sparse twentieth-century modernist music aesthetics (as discussed above), we might wonder whether the rebellious allure of pulsating ‘dissonance’ for today’s Andean music scholars can be entirely disentangled from traditions – dating back multiple decades – of incorporating ‘noise’ into experimental ‘Western’ art and popular music and of exploring extended instrumental techniques. Would scholars (myself included) have been as ready to embrace *tara* and *sonido rajado*, or to explore their potential in pre-Hispanic music making, without the (largely unconscious) potentialities opened by experimental music?<sup>45</sup> And, can we neatly separate this embrace of Andean ‘dissonance,’ and the sense of utopian resistance to perceived conservative and hegemonic values it suggests, from the insurgent dynamics surrounding experimental music? While these questions are important, let us not lose sight of the impact of the ostensible ‘otherness’ of Andean pulsating ‘dissonance,’ and its counter-hegemonic implications, in the sphere of heritage making.

### **Heritage Politics**

These themes also emerge in José Manuel Izquierdo König’s (2018) analysis of the inclusion of the *baile chino* on UNESCO’s Representative List of the Intangible Cultural Heritage of Humanity (2014); Chile’s first expression to attain this status. Izquierdo observes that among the 14 Chilean expressions considered for nomination, the *baile chino* – although little known to most Chileans – stood out for its antiquity and relative lack of “European” influence (*ibid.*,

---

<sup>45</sup> In the vast repertoire of experimental music, using extended instrumental techniques, many standard wind instruments are expected to produce multiphonic effects (often incorporating beats). For tutor books dedicated to producing these sonorities on the recorder see, for example, Vetter (1974) and Hauwe (1992).

12-13). This, he notes, conforms to UNESCO's tendency to reinforce and seek out the exotic, as obviously and explicitly different, especially from an ideal of European cultural practices (*ibid.*, 12). This sense of exotic distance is further reinforced, suggests Izquierdo, in the video produced to accompany the nomination. This is notable for showcasing the flute players and their sounds – vividly contrasting the earliest *baile chino* recordings of the 1950s that instead focused on the sung verses and faded out as soon as the flutes began to play – suggesting a major shift in aesthetic representation and value (*ibid.*, 13). The 'unique sound' of the *baile chino* flute ensemble is also highlighted in the nomination file on UNESCO's website which notes how the ensemble's "composition and process of construction derives from different pre-Columbian Andean cultures (Paracas, Tiwanaku, Atacameño, Diaguita, and Aconcagua)." <sup>46</sup> With works by Claudio Mercado and José Pérez de Arce cited in the UNESCO file's bibliography, we see how *baile chino* researchers and *sonido rajado* are entangled in the political and nationalistic processes of heritage making. Nonetheless, alongside its exotic or 'other' nature, this nomination might, Izquierdo suggests, also be read as "counter-hegemonic," or at least "counter-enlightenment," within the context of Chilean culture (2018: 10).

The declaration of the music and dance of the *pinkillada* as the Intangible Cultural Heritage of the Plurinational State of Bolivia in January 2016 (law 780), might similarly be expected to reflect counter-hegemonic or decolonising motivations. <sup>47</sup> This law refers to the *pinkillu* flute music of Northern Potosí, discussed above, and the detailed bill (*proyecto de ley*), submitted to the Chamber of Deputies in April 2015, explicitly refers to these flutes' *tara* and *q'iwa* sounds. The first line of the bill reads: "The *Pinquillada* [sic] is a native music of ancestral existence performed on *pinkillos* or *flautas* with **tara and q'iwa** sound" (bold in original, my translation). <sup>48</sup> The bill also incorporates a table from one of my publications, outlining the sonic characteristics of *tara* and *q'iwa* (Stobart 2010: 29), although without citing the source. In reality, this was one of the best and most detailed heritage bills I have seen during collaborative research on heritage making in Bolivia with Michelle Bigenho. Indeed, very few Bolivian heritage bills include bibliographic references (Bigenho and

---

<sup>46</sup> UNESCO Nomination File 00988 <https://ich.unesco.org/en/RL/baile-chino-00988> (accessed 12 December 2020).

<sup>47</sup> The full law is available at: <http://www.diputados.bo/leyes/ley-n%C2%B0-780> (accessed 25 Aug 2021). *Pinkillada* (*pinquillada*) is a Spanish compound, based on *pinkillu*, which refers to performance contexts incorporating such flutes.

<sup>48</sup> "La *Pinquillada*, es una música originaria de manifestación ancestral interpretada con *pinkillos* o *flautas* de *sonido tara y q'iwa* [...]" (Proyecto de ley PL-148-15, proposed by Deputy Fidel Colque Pascual. 28 April 2015).

Stobart 2018b: 9). The passage of this law, however, had little to do with the country's stated 'decolonizing' policies. Rather, it was hastily pushed through by president Evo Morales himself, as part of a strategy to re-ignite popular support – especially among indigenous people – in the lead up to a referendum to change the constitution and permit him to stand for re-election. Championing the *pinkillada*, with its distinctively indigenous associations and sound world, clearly served as a means to bolster his political legitimacy, in a context in which "indigeneity is the foundation of a new nationalism" (Canessa 2012: 18; Postero 2017: 6). In the event Morales lost the referendum and his subsequent re-election attempt in 2019 backfired spectacularly. The heritage law gave rise to an annual festival of the *pinkillada* which Morales actively promoted. He is shown on a poster for the 2019 festival, held in Macha during the lead-up to the election, which quotes him proclaiming: "The pinkillada is like a flag of rebellion and indigenous decolonization" (my translation)<sup>49</sup> (Fig. 16). Here we see how these flutes' sonorities and my research of them have become unwittingly entangled in contentious politics and nationalist dynamics.

Even if Morales did not read the bill or reflect on the concepts of *tara* and *q'iwa*, the vibrant sound world of *pinkillus* (like that of *tarkas*, which are prominent where he grew up, in Oruro department) would have communicated a distinctive and potent sense of indigenous expression.<sup>50</sup> As with the case of the *chino* flute, Morales' description of this expression as 'millenary' suggests placing special value on its perceived antiquity and continuity with a pre-Hispanic past.<sup>51</sup> The Bolivian government's recognition of the *pinkillada* and UNESCO's listing of the *baile chino* as intangible cultural heritage would appear to be good reason for celebration. Until quite recently and beyond their immediate communities of practice, both genres were largely ignored, deprecated, and their acoustically 'dissonant' sonorities dismissed as 'noise.' But their current embrace as counter-hegemonic and decolonising expressions, should not distract us from the othering and exoticisation which underlie their presumed authentic, indigenous and ancestral identities. Similarly, we should not be naïve about the political expediencies for which they might be employed.

### **Beyond Pulsating 'Dissonance'**

---

<sup>49</sup> "La pinkillada es como bandera de rebelión y descolonización indígena" Evo Morales A.

<sup>50</sup> Morales may have conceived these as ancestral progenitors of the more modern looking *tarka* flutes.

<sup>51</sup> See "Morales insta a promover música y danzas como la Pinkillada para que sean conocidas en todo el mundo" (Viceministerio de Comunicación Bolivia) <https://comunicacion.gob.bo/?q=20190222/26664> (Accessed 1.12. 2020).

As briefly mentioned earlier, the various sized wooden flutes of the now heritage-anointed *pinkillu* flute ensemble – or *pinkillada* – are divided into two types: *tara* and *q'iwa*. This reflects the respective fingerings and sonority that each produces on the final sustained note of each *wayñu* melody (see Fig. 7).<sup>52</sup> *Tara* sizes make a vibrant (acoustically ‘dissonant’) sound with a multiphonic roll, whereas *q'iwa* sizes produce a clear and relatively thin sound (acoustically ‘pure tone’). Although my work on the buzzing ‘dissonant’ sonority and concept of *tara* has received considerable attention from music scholars, curiosity regarding its complementary sound-concept *q'iwa* has been restricted to this word’s connotations as mediated gender; “half-male, half-female” (Sigl and Mendoza 2012: 375). This relative paucity of interest in the sonority of *q'iwa* presumably reflects the way it is seen to ‘lack’ or to ‘fail to produce’ the vibrancy of *tara*. From this perspective *q'iwa* is ‘defective,’ which is also how Pérez de Arce glosses the *sonido botella* (‘bottle sound’) of Chilean *chino* flutes when sounded without the vibrant *rajado* sonority (2000: 235). Indeed, in rural contexts, I found the word *q'iwa* was also glossed as ‘mean,’ ‘lazy,’ or ‘infertile’ and carried a range of negative connotations relative to *tara*. It is thus tempting to dismiss the *q'iwa* sonority as undesirable and, in turn, irrelevant to understandings of Andean sonic aesthetics, except perhaps as *tara*’s other.

However, I would not be so hasty to dismiss the sonority and concept of *q'iwa* or the rich perspectives that it starts to open up. In a 1996 article “The Llama’s Flute: Musical Misunderstandings in the Andes” (Stobart 1996b), I charted connections between llama cries and the *tara* and *q'iwa* sonorities of *pinkillu* flutes (see also Stobart 2006b: 217-228). The article starts out with an account of my attempt to make an audio recording of the ‘hungry’ llama cries heard each morning in the corral next to my host family’s homestead in Kalankira, before the animals were taken out to pasture. Months previously, everybody had been perfectly happy for me to record the vibrant sonorities these animals made during a mass llama mating ceremony. As my hosts had directly connected these gurgling mating noises with the vibrant *tara* sonorities of *pinkillu* flutes, I felt I should document the plaintive *q'iwa*-like cries these animals also produce. However, my attempt to record was greeted by anger and I was requested to cease recording immediately; a reaction from these intimate friends, with whom I had previously lived for over a year, which was both shocking and

---

<sup>52</sup> On this termination note, players of *tara* instruments cover the top two finger holes (of six) to produce a vibrant *tara* timbre. Meanwhile, players of *q'iwa* size flutes, which are tuned a fifth higher, cover the lower five (of six) finger holes to produce a clear thin sound at the same pitch (or an octave above) the *tara*. All flute sizes are able to produce both *tara* and *q'iwa* sounds depending on fingering (see Fig. 7).

unprecedented. My Quechua-speaking host later explained that taking these sounds away to my country in a tape recorder would remove the llama's power to reproduce.

In other words, immense regenerative power was evidently seen to be embodied in these plaintive sounds. This is similarly suggested by Guaman Poma's (1936 [c. 1615]: 318) famous account of the Inca learning a new song by imitating the plaintive cries of a tethered llama (Stobart 2006b: 226-28).<sup>53</sup> The 'y. y.' shown emerging from the mouths of both the llama and the Inca in Guaman Poma's drawing (Fig. 17), suggests long vowel sounds (equivalent to the English 'ee') and thus 'tone,' rather than a vibrant or pulsating 'dissonant' sonority. My point here is a simple one: it would be perilous to permit our analyses of Andean sonorities – especially in the context of music archaeology – to be monopolised by the presumption that pulsating 'dissonance' was the predominant aesthetic. As this example seeks to demonstrate, to do so would risk missing critically important aspects of what sound has meant for people, but also how the rich vibrant and abundant sonorities discussed above intersected with others.

### **Final Reflections**

In this essay I have neither questioned the presence nor the importance – both past and present – of pulsating 'dissonant' timbre in Andean sonic cultures. It is a rich and fascinating topic and cause for celebration that scholars are taking sound seriously and approaching it from multiple disciplinary perspectives. However, I remain uncomfortable with the idea that pulsating 'dissonance' might come to represent a kind of monolithic pan-Andean aesthetic preference, and, in turn, a cliché of *lo andino*. Such over-generalisation is prone to various kinds of risks, as we saw with the case of Inca pentatony. While it remains conceivable that certain Inca music displayed pentatonic features, subsequent rejection of the theory is likely to dissuade scholars from considering this a serious option. Evidence for pre-Hispanic pulsating 'dissonance' may appear considerably more compelling than that for Inca pentatony, but when viewed in broader historical perspective the dynamics and dangers of over-generalisation are not as dissimilar as they might at first seem.

Complex questions surround the use of recent or contemporary ethnography to inform pre-Hispanic sound-making practices, especially if local people are conceived as a resource from which to extract information about the past rather than as collaborators. There is often a good case to be made for drawing on regional or local ethnographic models, rather than alien

---

<sup>53</sup> See also Tomlinson 2012: 63.



music cultures, especially when local people participate actively in research about their past, as in the case from Pucalán. Nonetheless, even in these cases, the ‘wondrous stories’ we construct are neither neutral nor consequence free. For example, if pulsating ‘dissonance’ becomes essentialised as a stereotype of Andean indigenous authenticity, might groups whose sound making does not exhibit this aesthetic quality lose indigenous legitimacy? (Conklin, 1997; Postero 2007: 20). By the same token, how might such expressions be co-opted or manipulated to political ends?

A considerable number of pre-Hispanic Andean and other Latin American flutes have been shown to produce pulsating ‘dissonance,’ especially those with double chambers or complex tubes. In many cases, this is not the only sonic resource of these objects, but it is one that seems to provoke particular interest and to motivate analysis, measurements and experiments. Pulsating ‘dissonance’ emerges as something interesting we can say about archaeological sound objects and can share with other scholars. This kind of discourse – as with Inca pentatony – can easily gain momentum; objects become interesting and relevant because they share this feature, and we begin to notice and value them. But is there a danger that, for example, a panpipe without complex tube construction, or forms of instrument which do not produce pulsating ‘dissonance,’ will be overlooked as faulty, second-rate or as lacking value or scholarly interest?

While certain archaeological instruments may be sounded in such a way as to produce beats, pulsations or multiphonics, for example through adjusting breath pressure, fingerings, or the juxtaposition of two similar instruments, this is equally true of many standard Western instruments. For these latter instruments, it is common to approach the production of multiphonic or beating sounds as the ‘extended techniques’ of experimental music. This leads us to questions of intentionality in our approach to the sounding of archaeological instruments. In what contexts did pre-Hispanic players actively seek out and prioritise dissonance beats or the multiphonic roll – as one option among multiple potential sonic affordances? Complex tube flutes and double chamber whistles often offer a compelling case for pulsating ‘dissonance,’ but evidence is negligible for the case of many other archaeological instruments. In addition, to imagine that we can entirely separate our experiments with such instruments – and the ‘wondrous stories’ we create about them – from histories of (Western) experimental music making, with its implicit challenge to conventional repertoires, is probably naïve.

Where certain ancient and contemporary instruments are evidently intended to produce pulsations and ‘dissonance,’ this can also differ considerably in intensity and type.

For example, should we interpret the dense and undulating timbres produced by tuning discrepancies (‘Amerindian tuning’) as the same thing as vibrant multiphonic *tara* or *rajado* sonorities, sought out so explicitly by *pinkillu* and *chino* flute players? Even if certain shared acoustic principles underlie how these sounds are produced, ethnographic perspectives suggest that we should remain alert to differences in intensity, meaning, and context. For example, we saw how the vibrant *tara* timbre was largely restricted to wooden duct flutes of the rains, especially the feast of Carnival – the climax of the growing season – and vividly expressed the merging of agricultural and sonic ‘abundance.’ Tuning discrepancy, by contrast, appeared as a generalised feature of wind ensemble performance, offering ‘zest’ and density, but did not appear to be constrained by seasonality.

Through highlighting global continuities in the use of tuning discrepancies and pulsating, beating or buzzing effects, alongside stressing adaptation to acoustic contexts, I have tried to avoid essentialising an aesthetic for pulsating ‘dissonance’ as somehow unique to the Andes or Latin America. Nonetheless, this global perspective has emphasized certain regionally distinctive and ancient trends, such as expertise in ceramic flute production, double chamber whistles, and complex tube technology. The emergence of Andean timbre – as the product of scholarship – has clear parallels with what Kofi Agawu has called “the invention of African rhythm” (1995). In both cases, musical characteristics have had a tendency to be over-generalised, exoticised and juxtaposed as *different* from so-called ‘Western music,’ thereby potentially becoming a kind of cliché. Vibrant Andean ‘dissonant’ harmony as a counterhegemonic challenge and decolonising strategy is hugely seductive, but – as in encounters with Andean *sirinus*, *sirenas* or ‘sirens’ (Stobart 2006a) – we need to remain vigilant if our engagements are to be fruitful, rather than end in disaster. My hope is that in a century’s time people will look back on today’s research into pulsating ‘dissonance’ as an important foundation to understandings of Andean sonorities, rather than – as happened with Inca pentatony – only what it might tell them about past music scholarship.

## **Acknowledgements**

My thanks to Alexander Herrera for inviting me to write this paper and to Sebastian Hachmeyer, Mark Howell, Matthias Stöckli and Alexander Herrera for their insightful comments on earlier drafts. Special gratitude also goes to my many hosts, friends, musical participants and colleagues in Bolivia, Chile and beyond – over multiple decades - who have

opened up such a rich world of (musical) sonorities to me, and who - through their generosity and conversations - have maybe helped me grasp a first few crumbs of understanding.

## Bibliography

Agawu, Kofi

1995 The Invention of “African Rhythm.” In *Journal of the American Musicological Society*. 48/3, 380-395.

Agricola, Martin

1542 *Musica instrumentalis deudsch*. Georg Rhau, Wittenberg.

Baker, Geoffrey

2008 *Imposing Harmony: Music and Society in Colonial Cuzco*. Duke University Press, Durham and London.

Baumann, Max Peter

1982 *Bolivien: Musik im Andenhochland / Bolivia: Music in the Andean Highlands* (2 LP records with notes) (Artur Simon, ed.). Museum Collection MC14, Berlin.

Berliner, Paul F.

1993 *The Soul of Mbira: Music and Traditions of the Shona People of Zimbabwe*. University of Chicago Press, Chicago and London.

Bigenho, Michelle

2002 *Sounding Indigenous: Authenticity in Bolivian Music Performance*. Palgrave Macmillan, New York.

Bigenho, Michelle, and Henry Stobart

2018a Grasping Cacophony in Bolivian Heritage Otherwise. In *Anthropology Quarterly* 91/4, 1329-1364.

2018b Archiving Expertise and Aspiring to Heritage. In *TRANS-Revista Transcultural de Música / TRANS-Transcultural Music Review* 21-22, 1-13.

Bithell, Caroline

2006 The Past in Music: Introduction. In *Ethnomusicology Forum* 15/1, 3-16.

Borras, Gérard

1998 “Poco varía”: Le sésame de l'organologie aymara. In *Musiques d'Amérique latine* (Conference proceedings), 33-46. CORDAE / La Talvera, Cordes.

Brusila, Johannes

- 2001 Musical Otherness and the Bhundu Boys: The Construction of the ‘West’ and the ‘Rest’ in the Discourse of ‘World Music’. In *Same and Other: Negotiating African Identity in Cultural Production* (Maria Eriksson Baaz and Mai Palmberg, eds.), 39-56. Nordiska Afrikainsitutet, Stockholm.

Canessa, Andrew

- 2012 *Conflict, Claim, and Contradiction in the New Indigenous State of Bolivia*. Research Network on Interdependent Inequalities in Latin America, Working Paper no.22. [www.desigualdades.net/Resources/Working\\_Paper/22\\_WP\\_Canessa\\_online.pdf](http://www.desigualdades.net/Resources/Working_Paper/22_WP_Canessa_online.pdf) (accessed 12. 12. 2020).

Castellengo, Michèle

- 1982 Sons multiphoniques aux instruments à vent. In *Rapports IRCAM* 34/82, 1-21.

Cavour Aramayo, Ernesto

- 1994 *Instrumentos musicales de Bolivia*. Producciones CIMA, La Paz.  
2005 *Diccionario enciclopédico de los instrumentos musicales de Bolivia*. Producciones CIMA, La Paz.

Conklin, Beth

- 1997 Body Paint, Feathers, and VCRs: Aesthetics and Authenticity in Amazonian Activism. In *American Ethnologist* 24/4, 711-734.

Cousineau, Marion, Josh McDermot, and Isabelle Peretz

- 2012 The Basis of Musical Consonance as Revealed by Congenital Amusia. In *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* 109/48, 19858–19863.

DeWitt, Mark

- 2012 From Chanky-Chank to Yankee Chanks: The Cajun Accordion as Identity Symbol. In *The Accordion in the Americas: Klezmer, Polka, Tango, Zydeco, and More!* (Helena Simonett, ed.), 44-65. University of Illinois Press, Urbana, Chicago and Springfield.

Driver, Merlyn

- 2017 The Buzz Aesthetic and Mande Music: Acoustic Masks and the Technology of Enchantment. In *African Music Journal of the International Library of African Music* 10/3, 95-117.

Dutiro, Chartwell (interviewed by Keith Howard)

- 2007 Chosen by the Ancestors. In *Zimbabwean Mbira Music on an International Stage: Chartwell Dutiro's Life in Music* (Chartwell Dutiro and Keith Howard, eds.), 1-7. Ashgate, Aldershot, U.K.

Fabre, Benoit, Patricio de la Cuadra, and José Pérez de Arce

- 2012 Antaras aconcagua: Un estudio antropológico y acústico. In *Aisthesis* 52, 325-334.

Ferreira, Francisco, and Billie Jean Isbell (eds.)

- 2016 *A Return to the Village: Community Ethnographies and the Study of Andean Culture in Retrospective*. Institute of Latin American Studies, London.

Frith, Simon

- 2000 The Discourse of World Music. In *Western Music and Its Others: Difference, Representation, and Appropriation in Music* (Georgina Born and David Hesmondhalgh, eds.), 305-322. University of California Press, Berkeley, Los Angeles and London.

Gérard, Arnaud

- 1997 Multifonías en aerófonos andinos de Bolivia. In *Revista Boliviana de Física* 3, 40-59.  
1999 *Acústica de las siringas andinas de uso actual en Bolivia* (2 vols.). Informe de investigación mimeografiado. Universidad Autónoma Tomás Frías, Potosí.  
2007 Primera aproximación a la acústica de la tarka. In *Revista Boliviana de Física* 13, 33-38.  
2009 Sonidos “ondulantes” en silbatos dobles arqueológicos: ¿Una estética ancestral reiterativa? In *Revista Española de Antropología Americana* 39/1, 125-144.  
2010 *Diablos tentadores y pinkillus embriagadores ... en la fiesta de Anata/Phujllay: Estudios de antropología musical del carnaval en los Andes de Bolivia*. Plural editores, La Paz.  
2015 Tara: La estética del sonido pulsante – Una síntesis. In *Flower World: Music Archaeology of the Americas / Mundo Florido: Arqueomusicología de las Américas* 4 (Matthias Stöckli and Mark Howell, eds.), 43-64. Ekho Verlag, Berlin.

Gérard, Arnaud, Luis Yapu-Quispe, Sachiko Sakuma, Flavio Ghezzi, and Gonzalo Ramírez

- 2016 Nonlinear Behavior of the Tarka Flute’s Distinctive Sounds. In *Chaos* 26/9, 093114.

Grebe, María Ester

- 1974 Instrumentos musicales precolombinos de Chile. In *Revista Musical Chilena*, 28/128, 5-55.

Greene, Paul D.

- 2019 Contests of Devotion in Nepal: Music and Civic Rivalry in the Buddhist *communitas*. In *Ethnomusicology Forum* 28/2, 184-199.

Gruszczyńska-Ziółkowska, Anna

- 2014 *Detrás del silencio: La música en la cultura nasca*. Fondo Editorial, Pontificia Universidad Católica del Perú, Lima.

Guaman Poma de Ayala, Felipe

- 1936 [c.1615] *Nueva corónica y buen gobierno (codex péruvien illustré)*. Institut d’Ethnologie, Paris.

Gudemos, Mónica, and Julio Catalano

- 2009 El cuerpo del sonido: Flautas antropomorfas de tradición Bahía. In *Revista Española de Antropología Americana* 39/1, 195-218.

Hachmeyer, Sebastian

- 2018 The Qantu and Music Therapy in the Kallawaya Heritage Context. In *TRANS-Revista Transcultural de Música / TRANS-Transcultural Music Review* 21/22, 1-26.  
2020 *Musical Bamboos: Flute Making, Natural Resources, and Sustainability in the Bolivian Andes*. Ph.D. thesis. Royal Holloway University of London, London.

- d'Harcourt, Raoul, and Marguerite d'Harcourt  
1925 *La musique des incas et ses survivances*. P. Geuthner, Paris.
- Hauwe, Walter van  
1992 *The Modern Recorder Player*. Schott, London.
- Helmholtz, Hermann von  
1885 *On the Sensations of Tone as a Physiological Basis for the Theory of Music* (Alexander John Ellis, ed.). Longmans, Green, and Co., London.
- Hobart, Mark (ed.)  
1993 *The Anthropological Critique of Development: The Growth of Ignorance*. Routledge, London.
- Izquierdo König, José Manuel  
2018 Bailes chinos: Problemáticas históricas, institucionales y estéticas en torno a una declaratoria de patrimonio inmaterial UNESCO. In *TRANS-Revista Transcultural de Música / TRANS-Transcultural Music Review* 21/22, 1-20.
- Keesing, Roger  
1987 Anthropology as Interpretive Quest. In *Current Anthropology*. 28/2, 161-176.  
1989 Exotic Readings of Cultural Texts. In *Current Anthropology*. 30/4, 459-479.
- Keil, Charles  
1987 Participatory Discrepancies and the Power of Music. In *Cultural Anthropology* 2/3, 275-283.
- Kreitner, Kenneth  
1992 Minstrels in Spanish Churches, 1400-1600. In *Early Music* 20/4, 532-546.  
2003 The Cathedral Band of León in 1548, and When It Played. In *Early Music* 31/1, 41-62.
- Lahdelma, Imre, and Tuomas Eerola  
2020 Cultural Familiarity and Musical Expertise Impact the Pleasantness of Consonance/Dissonance but not Its Perceived Tension. In *Scientific Reports* 10/8693, 1-11.
- Lasocki, David.  
2001 *Recorder*. Grove Music Online. <https://www.oxfordmusiconline.com/https://doi.org/10.1093/gmo/9781561592630.article.23022>.
- Martinez, Rosalía  
2000 *Bolivia: Musique des Calcha / Bolivia: Music of the Calcha*. (CD recording with liner notes). Collection CNRS, Musée de l'Homme. Le Chant du Monde, CNR 2741120, Paris.
- McDermott, Josh, Alan Schultz, Eduardo Undurraga, and Ricardo Godoy  
2016 Indifference to Dissonance in Native Amazonians Reveals Cultural Variation in Music Perception. In *Nature* (28 July 2016) 535, 547-550.

McGowan, Keith

- 1999 The Prince and the Piper: Haut, Bas and the Whole Body in Early Modern Europe. In *Early Music* 27/2, 211-232.

Mendívil, Julio

- 2018 *Cuentos fabulosos: La invención de la música incaica y el nacimiento de la música andina como objeto de estudio etnomusicológico*. Pontificia Universidad Católica del Perú, Instituto de Etnomusicología (PUCP-IDE), Instituto Francés de Estudios Andinos (IFEA), Lima.

Mercado, Claudio

- 1996 Detrás del sonido, el mundo. In *Takiwasi* 2/2, 46-61.  
2005 Con mi flauta hasta la tumba / With My Flute to the Grave. In *Boletín del Museo Chileno de Arte Precolombino* 10/2, 29-49.

Olsen, Dale

- 2002 *Music of El Dorado: The Ethnomusicology of Ancient South American Cultures*. University Press of Florida, Gainesville.

Page, Christopher

- 2000 Ancestral Voices. In *Sound* (Patrica Kruth and Henry Stobart, eds.), 133-150. Cambridge University Press, Cambridge.

Pérez de Arce, José

- 1998 Sonido Rajado: The Sacred Sound of Chilean Pifilca Flutes. In *The Galpin Society Journal* 51, 17-50.  
2000 Sonido Rajado II. In *The Galpin Society Journal* 53, 233-253.  
2006 Whistling Bottles: Sound, Mind and Water. In *Studien zur Musikarchäologie / Studies in Music Archaeology* 5 (Ellen Hickmann, Arnd Adje Both and Ricardo Eichmann, eds.), 161-182. Marie Leidorf, Rahden/Westf.  
2018 La flauta colectiva. In *Música y sonidos en el mundo andino: Flautas de Pan, zampoñas, antaras, sikus y ayarachis* (Carlos Sánchez Huaranga, ed.), 51-116. Universidad Nacional Mayor de San Marcos, Fondo Editorial, Lima.  
2020 Prehispanic Flutes, Past and Future: A Revision of the Social Role of Flutes in South America at the XXI Century. In *Journal of Historical Archaeology & Anthropological Sciences* 5/4, 141-149.

Platt, Tristan, Thérèse Boyssse-Cassagne, and Olivia Harris

- 2006 *Qaraqara-Charka: Mallku, inka y rey en la provincia de Charcas (siglos XV-XVII)*. Plural editores, La Paz.

Postero, Nancy

- 2007 Andean Utopias in Evo Morales's Bolivia. In *Latin American and Caribbean Ethnic Studies* 2/1, 1-28.  
2017 *The Indigenous State: Race, Politics, and Performance in Plurinational Bolivia*. University of California Press, Oakland.

Racy, Ali Jihad

1993 Historical Worldviews of Early Ethnomusicologists: An East-West Encounter in Cairo, 1932. In *Ethnomusicology and Modern Music History* (Stephen Blum, Philip V. Bohlman and Daniel M. Neuman, eds.), 68-91. University of Illinois Press, Urbana and Chicago.

Rasnake, Roger

1988 *Domination and Cultural Resistance: Authority and Power Among an Andean People*. Duke University Press, Durham and London.

Riera, Pablo, Martin Proscia, and Manuel Eguia

2014 A Comparative Study of Saxophone Multiphonics: Musical, Psychophysical and Spectral Analysis. In *Journal of New Music Research* 43/2, 202-213.

Sigl, Eveline, and David Mendoza Salazar

2012 *No se baila así no más... (Tomo I: género, poder, política, etnicidad, clase, religión y biodiversidad en las danzas del altiplano boliviano)*. Self-published by authors, La Paz.

Starn, Orin

1991 Missing the Revolution: Anthropologists and the War in Peru. In *Cultural Anthropology* 6/1, 63-91.

Stevenson, Robert

1968 *Music in Aztec and Inca Territory*. University of California Press, Berkeley and Los Angeles.

Stobart, Henry

1988 *The Pinkillos of Vitichi*. Unpublished document (to accompany instrument collection). Horniman Museum, London.

1996a *Tara and Q'iwa: Worlds of Sound and Meaning*. In *Cosmología y música en los Andes* (Max Peter Baumann, ed.), 67-82. Vervuert and Iberoamericana. Frankfurt am Main and Madrid.

1996b The Llama's Flute: Musical Misunderstandings in the Andes. In *Early Music* 24/3, 471-482.

2006a Devils, Daydreams and Desire: Siren Traditions and Musical Creation in the Central-Southern Andes. In *Music of the Sirens* (Linda Phyllis Austern and Inna Naroditskaya, eds.), 105-139. Indiana University Press, Bloomington.

2006b *Music and the Poetics of Production in the Bolivian Andes*. Ashgate, Aldershot.

2010 *Tara y q'iwa: Mundos de sonidos y significados*. In *Diablos tentadores y pinkillus embriagadores ... en la fiesta de Anata/Phujllay* (Arnaud Gérard, ed.), 1-40. Plural editores, La Paz.

2013a Staging Sound: Acoustic Reflections on Inca Music, Architecture and Performance Spaces. In *Flower World: Music Archaeology of the Americas / Mundo Florido: Arqueomusicología de las Américas 2* (Matthias Stöckli and Arnd Adje Both, eds.), 11-35. Ekho Verlag, Berlin.

2013b Unfamiliar Sounds? Approaches to Intercultural Interaction in the World's Musics. In *Music and Familiarity: Listening, Musicology and Performance* (Elaine King and Helen Prior, eds), 109-136. Ashgate, Farnham, UK.

Tomlinson, Gary



- 2012 Inca Songwork, 1535. In *Flower World: Music Archaeology of the Americas / Mundo Florido: Arqueomusicología de las Américas 1* (Matthias Stöckli and Arnd Adje Both, eds.), 55-68. Ekho Verlag, Berlin.

Turino, Thomas

- 1991 The State and Andean Music Production in Peru. In *Nation States and Indians in Latin America* (Greg Urban and Joel Sherzer, eds.), 259-285. University of Texas Press, Austin.
- 1993 *Moving Away from Silence: Music of the Peruvian Altiplano and the Experience of Urban Migration*. Chicago University Press, Chicago.
- 2008 *Music as Social Life: The Politics of Participation*. University of Chicago Press, Chicago and London.
- 2015 The Music of Sub-Saharan Africa. In *Excursions in World Music*, Sixth edition (T. Rommen, B. Nettl, C. Capwell, I. Wong, T. Turino, P. Bohlman, and B. Dueck, eds.), 196-237. Routledge, New York.

Vetter, Michael

- 1974 *Il flauto dolce ed acerbo*. (English translation). Moeck, Celle.

Whaples, Miriam A.

- 1998 Early Exoticism Revisited. In *The Exotic in Western Music* (Jonathan Bellman, ed.), 1-25. Northeastern University Press, Boston.

Zalaquett Rock, Francisca Amelia, and Dulce Sugey Espino Ortiz

- 2019 Flautas triples de Jaina y Copán: Un estudio arqueoacústico. In *Ancient Mesoamerica* 30/3, 419-438.