

Music and State of Mind: Towards an Evolutionary Model of Gender

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A considerable portion of the general population, at least in the western world, would endorse the principle of gender equality. According to this opinion, men and women have an equal, innate potential for political action, leadership, invention, and creativity in the arts and sciences. A similar attitude is shared by scholars of the humanities, including ethnomusicologists. Differences between the sexes, and specifically men's greater share in the fields of science and artistic creativity, are controversial matters. Some believe that differences in performance between the sexes are the result of social conditioning and the patriarchal social order prevalent in most known societies; others, mostly led by evolutionary psychologists, offer an explanation based on the process of human evolution and sexual selection.¹ The topic, one would agree, inevitably leads to a politically and scientifically charged polemic.

Despite the breaking down of rigid demarcations between men's and women's roles in the public and creative realms, and the acceptance and legitimacy of women's entrance into public professional domains and leadership roles, many recent studies in the fields of feminism, social science, anthropology and musicology openly confirm the persistence of gender inequality.² Notwithstanding societal changes in the western world, 'musical genius' is still primarily

¹ For a broad review of the literature and theories of evolutionary psychology, see David C. Geary, *Male, Female: The Evolution of Human Sex Differences*, 2nd ed. (Washington, DC: American Psychological Association, 2010). For a critique of neuro-scientific, largely determinist theories of gender differences in cognitive and behavioural domains, see Cordelia Fine, *The Real Science Behind Sex Differences: Delusions of Gender* (London: Icon Books, 2010 [reprinted 2011]).

² See, for example, Pirkko Moisala and Beverly Diamond, eds, *Music and Gender* (Urbana/Chicago: University of Illinois Press, 2000).

associated with maleness and invokes associations with great men such as Beethoven, Mozart, Louis Armstrong and Duke Ellington, or Jimi Hendrix and The Beatles, and to a far lesser extent, if at all, with their female counterparts such as Hildegard von Bingen, Clara Schumann, Ella Fitzgerald and Aretha Franklin, or Suzi Quatro and the Spice Girls.³ The situation is not much different in non-western societies: Indian and Persian classical music, Indonesian ensemble practice, like Balkan virtuoso instrumental styles or Georgian traditional polyphonic singing, are largely dominated by male artists. Musical styles seem more egalitarian among hunter-gatherers and some agricultural societies where women have had higher social status and sexual freedom, such as, for example, the Mosuo and Almai Tibetans of China, the Tuaregs of North Africa, or the Pygmies of Central Africa. However, even in these societies there are gender divisions in musical activities that await a detailed comparative analysis. Clearly, it is in those cultures where music has become a highly sophisticated or military form of expression that men dominate the highest achievements and innovations.

Some gender scholars believe that 'the problem is not a lack of women composers or their achievements, but a lack of acknowledgement of their work in books, classrooms and concert halls.'⁴ However, such a conclusion cannot be fully credited without further and deeper examination of the issue. It is vital to note that the outperformance of women by men should not be understood to mean that all, or even most men outperform women in musical (or any other) fields of creativity. Variation across the sexes in terms of talent, motivation and ability in general is a fact that is difficult to overlook. For example, while maths geniuses are often men, many females outperform their male counterparts in this cognitive capacity. When scholars discuss cognitive gender differences, it is often mentioned that intellectual performance correlates with gender mostly *at the highest levels* of creativity, meaning that while some women might outperform men as physicists or musicians, the universally accepted geniuses such as Newton and Einstein, and the most influential musicians in most societies, are male.

Aims and Theoretical Framework

My aim in this article is to argue the need for comparative cross-cultural analysis and to propose a possible theoretical frame for the interpretation of the relationships between gender/sex and musical style. First, though, a note on terminology: I use the terms gender and sex synonymously. In fact, 'gender' has become a very ambiguous term. For example, there is tendency to inflate 'gender' with various personal experiences and subjectivities. Pirkko Moisala, in her theory of 'musical gender' writes that at the level of individual experience there are as many genders as there are human beings,⁵ a view that risks equating gender with personality and individual subjectivity. While I agree that gender is flexible at the level of personal experience, I also believe that this should not become an obstacle in the search for universal patterns. Here I am writing about sex, rather than 'gender' or even 'sexuality.' The sexuality and gender/personality of each woman and man may vary, and gender roles, sex

³ On the relationship between 'genius' and gender, see Christine Battersby, *Gender and Genius: Towards a Feminist Aesthetics* (London: Women's Press, 1989).

⁴ Hannah Bosma, 'Women Composers and Music Technology in the United States: Crossing the Line,' *Organised Sound* 12.2 (2007): 184.

⁵ Pirkko Moisala, 'Musical Gender in Performance,' *Women and Music*, Moisala and Diamond, eds, 3.

roles, and sexuality may be very idiosyncratic, but the sex of a person (female/woman) or (male/man), is quite stable physiologically speaking.

Without a comparative analysis it is hard even to start interpreting sex differences in musical creativity cross-culturally, especially given the accumulating studies of gender arrangements in single cultures. While cross-referencing is common in ethnomusicological literature on gender, the focus in each study is still largely on one tradition. Even in articles dedicated to cross-cultural analysis of gender roles in music such as Ellen Koskoff's 1990 article 'Gender, Power, and Music,' the formulation of universal patterns of gender behaviour is avoided.⁶ Koskoff aims to find a universal approach to the study of gender roles rather than establishing universal patterns of gender behaviour across cultures and societies, leading her to the conclusion that gender styles across societies vary widely. My aim in this article is to overcome such a theoretical canon in ethnomusicology and gender studies, and look for universal models as well as possible explanations complementary to the one that focusses on social conditioning. I am also aware of the tendency towards exaggeration of gender differences in almost every detail of behaviour, leading to pseudo-scientific conclusions about the nature of sex differences as putatively hardwired in the brain.⁷ I agree with the idea that there is greater similarity between men's and women's social and cognitive behaviour than there are differences. Nevertheless, this acknowledgment should not inhibit scholars from searching for the roots of differences.

My objective is to discuss the possibility of discovering a universal pattern of any nature in the relationship between female and male music-making and creativity. I also argue that there is a need for relevant and useful criteria that can reveal cognitive, creative, and performative differences between men's and women's music-making universally, rather than only for each specific culture. While each culture may have an idiosyncratic arrangement of gender relations in music performance and social hierarchy, this by no means excludes the possibility of universal gender patterns, because specifics might be culturally unique ways of expressing more universally developed sex-related behavioural patterns, in the same way that the uniqueness of each music culture is a specific expression of the universal human capacity for vocal and coordinated rhythmic expression.

⁶ Ellen Koskoff, 'Gender, Power, and Music,' *The Musical Woman: An International Perspective Volume III: 1986–1990*, ed. Judith Lang Zaimont, Jane Gottlieb, Joanne Polk and Michael J. Rogan (New York/ Westport, CT/London: Greenwood Press, 1990), 769–88, 784.

⁷ Such biased conclusions are often informed and motivated by the need of modern society to maintain the existing male-dominated social order, or, not least I believe, by the inability of many individuals, including scholars, to think beyond our modern-day psychology and belief systems. Thus, many evolutionary psychologists assume that a man's jealousy and outrage at finding his female partner with another man is hardwired in the male human's brain, and they remain immune to cross-cultural and logical evidence pointing to alternative explanations for modern-day jealousy-related behaviour. In fact, the modern behaviour of jealousy might be a secondary, derivative behaviour from a primary cognitive function of human mind, such as fear of social exclusion. Such a view is more consistent with recent views on sexuality, according to which humans, like some other species and primates, are not a monogamous species. For evolutionary psychological theories of human behaviour, see Jaime C. Confer, Judith A. Easton, Diana S. Fleischman, Cari D. Goetz, David M.G. Lewis, Carin Perilloux and David M. Buss, 'Evolutionary Psychology: Controversies, Questions, Prospects, and Limitations,' *American Psychologist* 65.2 (2010): 110–26; For the criticism of modern evolutionary psychological views on human sexuality, see Christopher Ryan and Cacilda Jethá, *Sex at Dawn: The Prehistoric Origins of Modern Sexuality* (Melbourne: Scribe Publications, 2010; first published by Harper Collins [2010]). For recent critical analysis of the relevant neuroscientific and popular literature, see Fine, *Real Science behind Sex Differences*.

Finally, I propose that the interpretation of sex differences can possibly be related to and analysed within the framework of the growing research into the origins of music and the recognition of music's central role in human evolution. If music is a universal human behaviour as Blacking and Merriam have argued,⁸ and if it has fulfilled a significant biological-affective function in the evolution of the human species, as evolutionary and comparative musicologists have argued more recently,⁹ then it is also possible that the sexes, who have a singular biological make-up and input into the reproduction and economy of human culture, also had a different relationship to music production. In the last section of the article, I outline some possible evolutionary reasons for existing and enduring sex differences in the field of music.

Reasons behind Sex Differences: Social Construction or Innate Quality?

What are the reasons for existing sex differences and how shall we select criteria for the analysis of these differences in musical styles cross-culturally? Often the outperformance of men in the field of creativity is linked to historical contexts and social conditioning, a linkage which, in many ways, is justified. For example, Jennifer Post notes that women experienced restrictions that affected and shaped their music before the middle of the twentieth century.¹⁰ While acknowledging that this is true, we need to approach the role of historical contexts and social conditioning in the development of sex differences more broadly, with consideration of other possible factors. One reason is that, in previous historical epochs, which are often viewed as particularly oppressive for women, women have often been productive and creative. It is not only during the twentieth century that women have been allowed to be creative and powerful. Women's advances in creativity and sciences can be seen as occurring in historical waves rather than as a single-directional process from oblivion in the past to recognition in today's world. As many have shown, while today's western democracies generally demand equal opportunities and access to education for women—an unquestionably powerful factor in women's advances in the last five or so decades—'automatic gender associations' of male mental superiority prevail even among the modern westerners dedicated to gender-equal parenting (or what Fine calls 'parenting with a half-changed mind').¹¹ Even though we have consciously accepted that women and girls have equally creative minds as men and boys, there are certain implicitly maintained associations that support the continuation of gender inequality.

Alan Lomax was one of an earlier generation of ethnomusicologists who focused on the universality of the gender factor in musical behaviour. Lomax proposed that sex was a major

⁸ John Blacking, *Music, Culture and Experience* (London: University of Chicago Press, 1995) 224; Allan P. Merriam, *The Anthropology of Music* (Chicago: Northwestern University Press, 1964) 227.

⁹ Ian Cross, 'Music, Cognition, Culture and Evolution,' *Annals of the New York Academy of Sciences* 930: The Biological Foundations of Music (2001): 28–42; Steven Brown, 'Evolutionary Models of Music: From Sexual Selection to Group Selection,' *Perspectives in Ethnology* 13.13 (2000): 231–81; Nils L. Wallin, Björn Merker and Steven Brown, *The Origins of Music* (Cambridge, MA/London: MIT Press, 2000); Nathan Kogan, 'Reflections on Aesthetics and Evolution,' *Critical Review* 11.2 (1997): 193–210; Joseph Jordania, *Why Do People Sing? Music in Human Evolution* (Tbilisi: Logos, 2011).

¹⁰ Jennifer C. Post, 'Erasing the Boundaries between Public and Private in Women's Performance Traditions,' *Cecilia Reclaimed: Feminist Perspectives on Gender and Music*, ed. Susan C. Cook and Judy S. Tsou (Urbana/Chicago: University of Illinois Press, 1993) 35–36.

¹¹ Fine, *Real Science behind Sex Differences*, 4–5, 83, 189–96, 197–202 ('automatic gender associations'); 197 ('half-changed mind').

factor around which types of music-making were built. In particular, he argued that sexual mores and 'the position of women, the sexual code, the degree of permissiveness about sexual enjoyment, and the affectual relationship between parents and children' influenced musical styles tremendously, at least in the areas in which he worked.¹² In more sexually permissive societies, the musical and singing style was relaxed, cohesive and polyphonic (such as among the 'Old Europeans' or African Pygmies).¹³ In repressive societies, the singing style was strained, solo-individualistic and non-cooperative (as among south Spanish societies, in Sicily and the many Eurasian styles influenced by and derived from so-called high cultures).¹⁴ While such an observation needs the support of further evidence, Lomax's statement about the link between musical style and sexual permissiveness finds interesting parallels with and confirmation from the most recent theories of the origins and nature of human sexuality.¹⁵ Lomax, however, was less concerned about actual sex differences in song styles or the cognitive and evolutionary reasons behind such differences, aspects that I am engaged with in this article. Like many subsequent studies on gender, Lomax's theory viewed 'gender roles' as the major reason of difference.

Gender Roles and Musical Roles

'Gender roles' is another theoretical frame within which sex differences have been interpreted. Gender roles is a fluid category, as many scholars have noticed and, as Jennifer Post rightly points out, 'It is the lack of rigid boundaries [between public (political) and private (domestic) spheres] that has caused the greatest challenge for scholars desiring clear theoretical constructs.'¹⁶ However, the picture changes if we start interpreting the private / public division in a broader conceptual context, as a more complex process and structure rather than as just a scenario in which women are in the home and men are outside. Then the division into gender roles becomes again a very powerful heuristic device in understanding sex differences in musical creativity or in any other field of cognitive, creative, social and physical experience. In this context, I agree with feminist scholars such as Linda Imray and Audrey Middleton, who 'believe that the public/private opposition is not related to activity inside or outside the home at all but to "power relationships" that become apparent through rituals men and women carry on in a variety of contexts.'¹⁷ Margaret Yocom has further proved this point, using the example of her Pennsylvanian grandmother's and grandfather's storytelling to show that 'the location does not matter to their [women's] storytelling as much as the privacy that those locations afford.'¹⁸ Women, we find, feel confident to share stories in settings in which they are

¹² Alan Lomax, 'Folk Song Style,' *Alan Lomax: Selected Writings 1934–1997*, ed. Ronald D. Cohen (New York/London: Routledge, 2005) 153–4.

¹³ Lomax, 'Folk Song Style,' 151

¹⁴ Lomax, 'Folk Song Style,' 152–66.

¹⁵ Ryan and Jethá, *Sex at Dawn*. The authors argue throughout the book that non-monogamous, 'promiscuous' sexual relations among small bands of humans were characteristic of the early stages of human evolution, fostering stronger bonds and social cohesiveness, and were also paralleled by the sharing of all resources.

¹⁶ Post, 'Erasing the Boundaries,' 36.

¹⁷ Linda Imray and Audrey Middleton, 'Public and Private: Marking the Boundaries,' *The Public and the Private*, ed. Eva Gamarnikow, David Morgan, June Purvis and Daphne Taylorson (London: Heinemann, 1983) 13–14; cf. Jennifer C. Post, 'Erasing the Boundaries,' 37.

¹⁸ Margaret R. Yocom, 'Woman to Woman: Fieldwork and the Private Sphere,' *Women's Folklore, Women's Culture*, eds. Rosan A. Jordan and Susan Kalcik (Philadelphia: University of Pennsylvania Press, 1985) 48.

dominant: as they move around while preparing food, setting or placing dishes on a dinner table and so forth, by and large at home in the company of people with whom they feel safe. The private sphere of women, then, is not defined by sexual exclusivity, physical space, type of material, or number of participants, but by 'a mode of social interaction, a space where none need fear ridicule or embarrassment.'¹⁹

From the above, it seems that female space needs to be safe. Thus, women create privacy and safety even in public spheres, while men create publicity even in private spheres.²⁰ A similar situation occurs in the field of musical creativity. For example, many think that women did not have their hands free to master musical instruments; this is seen to be the main reason behind women's greater involvement in vocal music and men's involvement in instrumental music in many European cultures.²¹ This is not completely true. For example, in many cultures certain instruments are used by both men and women. The guitar, a symbol of male musical virtuosity in today's western world, was once a woman's instrument and women take up guitar as freely as men do today. Nevertheless, it seems that men have made the instrument public and virtuosic, while women have used the instrument in more intimate, private settings and more modest styles. Women in Georgia played traditional instruments and, since the nineteenth century, also played the guitar, largely as a light accompaniment to singing. Men, on the other hand, played the guitar both as light accompaniment and a more technical, virtuosic instrument to a far greater extent than women did. Therefore, it seems that the question lies more in *how* men and women approach the same instrument or genre, rather than in *what* instruments and genres they play. Another challenge to the pattern of male instrumentalists-female singers and a proof of the '*how rather than what*' approach is that in Georgian traditional music, men have been the main proponents of singing, while women played traditional instruments. Furthermore, it is the singing that is the more virtuosic in Georgian tradition. Many musical traditions demonstrate that women and men have a different socio-psychological approach to music-making, or aspire to and achieve different states of mind in performance. I will try to exemplify this argument by drawing on several traditions in the next section.

Music, Gender and State of Mind

I wish to argue that the major criterion of difference according to which men's and women's musical-creative processes and performances should be analysed, is the *state of mind* (the psychological state) which men and women are able and willing to induce in their musical-artistic self-expression. According to Jane Sugarman, there are three interrelated features that distinguish the most highly-regarded men's performances in the Prespa Albanian singing tradition from those of the women:

First is more extensive textual embellishment, including not only the interpolation of exclamatory words, but also more frequent interruption of words and reiteration of syllables. Second is a more relaxed concept of meter. Many of the most celebrated

¹⁹ Yocom, 'Woman to Woman,' 52.

²⁰ From my observation and research it became apparent that while men, too, sing within the domestic realm, they project the emotions and sentiments of a song to a broader community; in other words, one can say that men make a bigger deal of their music-making than women do, whether the singing occurs in public or domestic settings.

²¹ Post, 'Erasing the Boundaries,' 40.

Prespa men's songs are nonmetric. Even for metric songs, however, singers often draw out certain syllables through various types of melodic ornamentation. They may also declaim phrases of the text in an almost conversational manner, so that individual syllables are in fact shortened. A sort of rhythmic elasticity is thus a prominent feature of men's singing, one that gives it an especially spontaneous and dramatic quality. Lastly, men singers may vary the melodic line more extensively than women, often 'lifting' the melody (*e ngren zënë*) by extending its range upward to an octave or more above the drone note.²²

Summarising this description, we might well conclude that men in this tradition have a more risk-taking approach to singing than women do; men are also more willing to expand the boundaries of learnt songs and styles. Moreover, as Sugarman writes, men can induce 'a prolonged and intense experience of nurturing their emotional capacities' far beyond the bounds of customary propriety than women can in any context. Nevertheless, it is interesting that such risk-taking, boundary-crossing behaviour does not lead to deviance from the tradition; on the contrary, it invokes greater emotional response and esteem from the general community as well as creating cohesion among the participating men. Sugarman compares the 'peak experience' (*muabet*) achieved by men through the prolonged, socially-structured drinking of alcohol and participation in group singing to the mental state of 'flow' described by the psychologist Csikszentmihalyi,²³ a mental state

characterized by a loss of ego, a merging of action and awareness, a 'narrowing of consciousness,' and a heightened sensation of control and awareness of one's physical self. Such 'flow states' are often induced by 'flow activities' that, like Prespa social gatherings, provide both established rules for action (*radhë*) and a clear form of feedback to participants (the level of emotionality of each man's singing). Csikszentmihalyi refers to the relationship among those engaged in a 'flow activity' as a 'social system with no deviance' (1975: 42), and indeed this seems to be the image that Prespa men take away from the most successful of their gatherings: a fleeting vision of themselves interacting as a close and cohesive community.²⁴

The state of mind induced by collective singing during a communal feast thus seems to be closely related to collective identity, whereby individual members feel as a cohesive group. Most importantly for this article, we learn that women's singing is more related to the subject matter of their songs and evokes more definable sentiments which are then contained by the women. Sugarman's female informants emphasised the obligatory aspect of their singing and focused on such considerations as their rationale in choosing a specific song. Men, in contrast, cared less about the specific subject matter or sentiments of the songs. Instead, men used singing to induce a transcendent experience.²⁵

In my analysis of Georgian singing, I have observed that a 'peak experience' of collective unity, similar to that described by Sugarman, was the primary goal for men. In the context of

²²Jane Sugarman, *Engendering Song: Singing and Subjectivity at Prespa Albanian Weddings* (Chicago: University of Chicago Press, 1997) 116.

²³Mihalyi Csikszentmihalyi, *Beyond Boredom and Anxiety* (San Francisco: Jossey-Bass, 1975) and *Flow: The Psychology of Optimal Experience* (New York: Harper and Row, 1990).

²⁴Sugarman, *Engendering Song*, 279.

²⁵Sugarman, *Engendering Song*, 79, 278.

the traditional Georgian feasting known as *supra*, toast-speech making, drinking, and singing all served this implicitly designated goal. I have often heard women (and some men who were less keen on joining the feasting male coalitions) complaining and criticising the topics and sentiments of *supra* speeches, questioning the relevance of such traditional collective events to 'real,' mundane life. Indeed, if one analyses each toast or song, one might question the practice in a more pragmatic way: why do people need all these elaborate formulaic and impromptu speeches, pronounced in an elevated state of mind, on themes of national feelings, love, eroticism, ancestors, or family? Why do we need to sing at all? Is not music, after all, an 'evolutionary cheesecake,' as Steven Pinker has described it? However, we also know that rites, often apparently meaningless according to everyday common sense, bring members of a community into a state of unity and reinforce their sense of belonging, and that ritual practices, pragmatically meaningless, are a universal marker of our species. It seems that, in many cultures, men are prone to put aside a mundane state of mind (or are permitted to, or both) and submerge themselves in 'meaningless' ritualised practices—to induce loss of ego in order to achieve collective unison. Life seems definitely more enjoyable that way.

Women, too, experience the collective unison. In Georgia, both men and women refer to a specific emotional cognitive state known as *keipi*, which means the carefree state of mind that occurs when a person starts enjoying the moment without thinking about mundane tasks. The structured ritual actions of the *supra* feast, with its drinking and singing, are the major means and context within which *keipi* occurs both for men and women. At all-women's gatherings, women often sing songs in an unreserved way for an hour or so, occasionally drinking alcohol like men do. On rare, special occasions (such as a birthday celebration), women at all-women's gatherings would carry out a traditional feast according to the ritual structure characteristic of men's gatherings, led by a woman who has a status of a 'masculine' female, one who has the talent for and has mastered the art of toast-making, drinking alcohol in relatively large amounts, and singing men's table songs in a bold, unreserved manner. However, in my fieldwork experience, men tended to sit, drink, sing and induce the state of *keipi* ('flow') for many more hours at a time than women did.²⁶

Another significant music-stylistic aspect that seems to reveal sex differences in the psychological state of mind is improvisation and the approach to musical innovation in Georgian traditional singing. As I have shown in my previous writings on Georgian men's and women's singing, men's styles employ more extensive textual as well as melodic embellishment, largely expressed in a more frivolous approach to the meaning of the words on the one hand (men's songs often blend words from various genres—love songs, heroic-historical songs and so forth—and may have no relation to the social occasion) and to the learnt version of a song on the other.²⁷ In their approach to the subject matter of songs, Georgian men resemble Albanian

²⁶ This tendency can also be observed in modern, western contexts such as musical parties and jam-sessions, of which I have been part many times. In these situations, men usually bring their instruments and can sit for hours and jam in a self-abandoned manner similar to that of Prespa or Georgian or Corsican male singers, while women seldom play instruments or sing for such long hours. There are exceptions, but women in most of these latter situations have been part of male-led jamming sessions. It is less likely, in modern contexts, that domestic chores beckon the women to go home. Women leave earlier as they feel less involved and attached.

²⁷ See, for example, Nino Tsitsishvili, "'A Man Can Sing and Play Better than a Woman", *Singing and Patriarchy at the Georgian Supra Feast*, *Ethnomusicology* 50.3 (2006): 464, 478.

men in their 'dismissal' of the topic of songs, as was noted in Sugarman's analysis. Georgian women's polyphonic singing, not unlike that of Prespa women, is far less rhythmically and harmonically elastic than the men's singing. In eastern Georgia, the non-metric polyphonic drinking songs that abound in ornamentation and melisma are exclusive to men's repertoire and are only rarely taken up by women. The very few female performers who have mastered this male style sing in male or mixed choruses, where they usually alternate as soloists with other male singers.²⁸ Women, as a gender group, do not own the style.

A significant manifestation of the heightened state of mind in which men sing and create songs is their far freer digression from the learnt version of a melodic line and vertical harmony. The most sophisticated Georgian men's songs are result of such a free approach. In these songs, the men treat the text with considerable freedom, use a minimal amount of meaningful lyrics, substitute vocables for words or draw out certain syllables,²⁹ thus transcending the subject matter of a song in an authoritative manner that allows them to focus on the sound. While men's parts in a polyphonic song are more individualised, based on the polyrhythmic development of each part, women's singing emphasises coherence, with parts moving in parallel blocks of chords. Although it might seem that women achieve greater unity through such rhythmic-melodic coherence, in fact, men's singing represents a higher degree of cooperation of parts and harmonic unity, because its unity is achieved through, and in spite of, the independence of each part. As one female expert of traditional singing told me, she tried not to deviate from the learnt version of a song.³⁰

The camaraderie achieved during men's singing allows for competition among the men, without ever making that competition the focus of their singing. The men's competition in singing is an indivisible part of their collective spirit and collaboration, and their emulation of each other produces highly individualised parts in a polyphonic song. In women's singing, by contrast, the more monorhythmic relationship between the three parts of a song allows none of the parts to stand out. The most idiosyncratic women's singing occurs in laments and ritual religious songs, songs that by their nature are far more limited in their technical-musical as well as emotional variety and freedom of expression. This limitation is aided by the fact that women's laments and religious songs are based on a musical quality which is totally governed by formulaic texts, and restrained by weeping and a social context defined by the rituals of mourning. Unlike the lyrics of men's drinking songs, the text in laments and religious songs has unrivalled dominance over the music, not even allowing the performers to focus on and develop technical-aesthetic aspects of singing or to transcend the subject matter of the song. The women's repertoires of laments and ritual songs are functionally grounded and dictated by the urgency of circumstances; they are performed in the contexts of and for the purpose of funerals and mourning, stripping them of the carefree indulgence in musical-artistic inspiration and collective exhilaration characteristic of the most elaborate men's drinking songs. The motivation to sing in these ritual genres seems to be related to social obligations such as observing a custom, making an appeal to the community, or expressing deference to

²⁸ See, for example, *In the Footprints of Our Ancestors*, self-published compact disc ([Signaghi, Eastern Georgia:] Zedashe Cultural Center, 2006).

²⁹ Tsitsishvili, "A Man Can Sing and Play Better than a Woman", 464–65.

³⁰ Fieldwork, village of Makvaneti, Georgia 1999.

the deities.³¹ Caroline Bithell differentiates the emotional states and reasons for singing that underlie Corsican women's *voceru* (laments) and the men's *paghjelle* (polyphonic songs). While the men are seen as singing out of pure joy 'integrated into the overall flow of both physical and emotional energy,' the *voceru* is often sited in a climate of intense and bitter conflict, replete with passionate outbursts of hatred and recrimination.³² The women's laments are individual statements, albeit meant to be heard by the community, lacking the collective unity, structured but informal, characteristic of the men's genres.

Karelian women's laments represent an interesting parallel to the Georgian ones. Obligatory by function, Karelian laments often contain words which are not comprehensible either to the audience or to the lamenters themselves. While the laments' exact meaning may not be intelligible, they are supposed to have an immense effect on and power over the audience, as well as to communicate with the dead.³³ Despite the absence of exact meaning, the Karelian laments analysed by Elizabeth Tolbert express quite specific emotional realms: 'For example, in a death lament, expressions of denial are followed by concern, and finally by resignation.'³⁴ We also learn that there are autobiographical laments; these, too, focus on a specific theme, such as the lamenter's unhappy life. Men sing laments in some traditions. In Georgia, for example, men collectively sing *zari*, which is perhaps better described as an abstract and solemn hymn-dirge. *Zari* dirges in Svaneti are sung exclusively on vocables 'vai, voi, oi' and do not contain any meaningful words.³⁵

A significant difference between the Georgian men's *zari* and the women's laments in Georgia, Corsica or Karelia, then, is that while men's dirge texts express no referential meaning, women's laments contain references to specific feelings of loss or everyday concerns—relationships, complaints and commentaries about their destinies, war, deserted homes after evacuation, or hopes for their children's better future—as well as providing ritual protection for those remaining alive. In this sense, women's traditional singing practices are also related to definable emotions and specific people. Hence, we might assume that since singing for men and women occurs as a result of different motivations and social conditions, they also experience and achieve different states of mind. While women may also experience a trance-like state of mind, this experience seems to be differently grounded and motivated from that achieved by men.

³¹ See the discussion of gender and improvisation in Nino Tsitsishvili, 'Gender and Improvisation in Georgian Vocal Polyphony,' *Papers from The Third International Symposium on Traditional Polyphony, 25–29 September 2006, Tbilisi, Georgia*, ed. Rusudan Tsurtsunia and Joseph Jordania (Tbilisi: Tbilisi State Conservatoire, 2008) 415–28 (in Georgian and English). To view a performance of an eastern Georgian women's religious song, see Hugo Zemp, *The Feast-Day of Tamar and Lashari*, DVD, 73 minutes, filmed in 1998 (Watertown, MA: Documentary Educational Resources, 2010), available at www.der.org.

³² Caroline Bithell, 'A Man's Game? Engendered Song and the Changing Dynamics of Musical Activity in Corsica,' *Music and Gender: Perspectives from the Mediterranean*, ed. Tullia Magrini (Chicago/London: University of Chicago Press, 2003) 44.

³³ Elizabeth Tolbert, 'Women Cry with Words: Symbolization of Affect in the Karelian Lament,' *Yearbook for Traditional Music* 22 (1990): 82.

³⁴ Tolbert, 'Women Cry with Words,' 83.

³⁵ See Hugo Zemp, *Funeral Chants from the Georgian Caucasus*, DVD, 21 minutes (Watertown, MA: Documentary Educational Resources, 2010), available at www.der.org/films/funeral-chants.html.

Paradoxically, the performance of laments offered a way for women to gain attention in a public space, which they were otherwise denied.³⁶ Another situation in which women turn the public field into their private intimate world—similar to that of the Pennsylvanian female storytellers referred to by Margaret Yocom, or Georgian women’s public lamentations—is exemplified by Lauren Ninoshvili’s analysis of *supra*. Ninoshvili has argued, that although women have habitually been excluded from the public and (by default), male, communal aspects of the *supra*—such as toast-telling, singing and drinking—the women have nonetheless devised their own creative ways for participation and fulfilment.³⁷ However, note the passive tense: the women are ‘excluded,’ but it is not explained by whom. In fact, most of my fieldwork with men and women in separate gender contexts showed that there were no explicit rules according to which women could not or would not make music in public settings. When I asked a Georgian male singer why women do not sing sophisticated songs similar to those of men, implying that they were excluded by men, the singer, sensing my assumption, answered somewhat offended: ‘No one has held [women] back from singing such songs, they may sing if they want.’³⁸ While women have indeed been excluded, the absence of rigid rules or specific culprits transfers attention to the implicit processes underlying such exclusion. Another proof of the absence of an institutionalised practice of exclusion in many contexts is that there have been female leaders of *supra* in Georgian tradition, and I have met three of them personally. These women were more able and motivated to transcend their biological subject position than most women were, and join men in their feasting, drinking and speech-making.

Women are usually passive participants in the *public* side of the feast. They often feel more comfortable to be in the kitchen, where they tell stories, mock their husbands, brag about their children and generally foster a convivial atmosphere uninhibited by the more structured nature of conversations and behaviour at the feast table. Ninoshvili describes a moment at one feast when a female member of the family emerged from the kitchen—the space dedicated to the traditionally female occupation of food preparation—to break into an impromptu performance of a disco dance. Ninoshvili reads the woman’s act as reclaiming this male-led event as a powerful arena for the production of female subjectivity and subversion of male authority in public matters. However, what is noteworthy to my argument is that the women’s ‘subversive’ performance has not ever become central to the community’s view of the collective social action that is central to every human society. Men’s *supra*, on the other hand, continues to be expressive of broader cultural intimacy and the essence of Georgian society. Ninoshvili also notes in a similar fashion to Sugarman, that Georgian women ‘do not seek the kind of transcendent experience—the “flow” described by psychologist Mihaly Csikszentmihalyi ... which is the goal of men’s participation in the *supra*.’ The women’s experience of ‘flow,’ like the Prespa women’s of *muabet*, was ‘qualitatively different from that of the men, who attained

³⁶ Helga Kotthoff, ‘Gender, Emotion, and Poeticity in Georgian Mourning Rituals,’ in *Gender in Interaction: Perspectives on Femininity and Masculinity in Ethnography and Discourse*, eds. Bettina Baron and Helga Kotthoff (Amsterdam; Philadelphia: John Benjamins, 2001) 283; Tullia Magrini, ‘Women’s “Work of Pain” in Christian Mediterranean Europe,’ *Music and Anthropology* 3 (1998), full text available at www.umbc.edu/MA/index/ma_ind.htm, accessed Aug. 2011.

³⁷ Lauren Ninoshvili, Report from the Kitchen Sink: The *Supra* and the Prospects for a Georgian Feminism, unpublished manuscript (2005).

³⁸ Fieldwork, village of Chalnari, Georgia, 20 Sep. 2004.

their peak of experience interactively, collaboratively.³⁹ The sense of collective unity through which the altered state of mind is achieved in men's singing may not be characteristic of female 'peak experience,' despite the presence of female collective identity and participation.

Further evidence of the focus on sonic blending as a way of merging into a collective action in men's music-making is provided by Caroline Bithell's analysis of Corsican singing. Bithell found that a self-abandoned state of mind characterises Corsican men's polyphonic singing. Within the culture, singers often describe polyphonic singing as *un état* (a state), 'and indeed the intensity of the experience appears to have an almost mesmerizing effect on the participants. The overall impression is that the singers are singing into one another, penetrating one another's song, creating a sense of intimacy and spiritual bonding, which is often further intensified by the effects of alcohol.'⁴⁰ The emotional intensity of Corsican men's singing is also apparent from the fact that they can continue for hours into the night, 'oblivious to the rest of the world and in particular uncomprehending of the need to return to the demands of an orderly domestic routine that might ever more urgently beckon any wives present.' Women's performances, on the other hand, are rarely characterised by the same qualities, even those of modern professional Corsican women singers who perform internationally and compose their own repertoire. In fact, as Bithell comments, the possibility of occupying a public space and gaining access to a national or international stage, as well as individual self-expression, was a major incentive for younger Corsican women to sing in polyphonic ensembles, while self-abandoned loss of ego merging into collective identity remains the characteristic of male singing.⁴¹

A geographically, culturally and stylistically remote but still related example of sex differences in the cognitive approach to musical style and performance is the tradition of gamelan ensemble in Bali. Sonja Downing notes that, despite the rise of women's participation in gamelans since the early 1980s and the improvement in their styles of playing, a strong hierarchy remains, whereby women's groups are considered to be, and in fact generally are, inferior in technique, dynamic range, and speed to men's gamelans.⁴² Opinion remains ambivalent as to whether women players, in general, can be equal with male players in terms of technical skills or leadership competence.

While it is clear that such comparisons cannot be generalised to mean that every male gamelan player is better than every female gamelan player, nevertheless the greatest of great female gamelan performers are still considered to be inferior to the greatest of the great male performers. Significantly for my argument, it is not the lack of actual talent and performance skill that makes women's playing inferior, but of a kind of embodied, physical-emotional style of playing, referred to by the performers as *gaya*. *Gaya* means knowledge of playing gamelan acquired through the body 'via kinaesthetic watching, physical handling and molding by a teacher'; by this term Balinese musicians describe 'particular modes of physical, bodily movement in performance.'⁴³ However, it is also clear that this embodied style of playing must be intimately connected with cognitive aspects, with a state of mind that either induces

³⁹ Ninoshvili, Report from the Kitchen Sink, 10, 5, 8.

⁴⁰ Bithell, 'A Man's Game?' 38.

⁴¹ Bithell, 'A Man's Game?' 38 ('oblivious to the rest of the world'), 53–54; 59.

⁴² Sonja Lynn Downing, 'Agency, Leadership, and Gender Negotiation in Balinese Girls' Gamelans,' *Ethnomusicology* 54.1 (2010): 55.

⁴³ Downing, 'Agency, Leadership, and Gender,' 63.

or is induced by the physical ways of knowing and playing. Downing, referring to Brinner, concluded that successful interaction allows musicians to transcend the limitations of their own individual competence.⁴⁴ It should not be overlooked that playing the Balinese drum *kendang*, like the drum-kit in western rock ensembles, requires a physical use of the body, including shoulder rotation, for which men, generally, have a clear advantage. While there are outstanding female drummers, the best male players are difficult for women to emulate.

Leadership in gamelan is linked with courage but also with physical strength, thus again linking physicality with the cognitive aspect of performance. As we learn from Downing's study, female gamelan players are seen to lack not talent and technique, but a specific quality of embodied interaction, an ability to follow gestured cues with *gaya*,⁴⁵ while boys and men seem to possess the competence to follow the *kendang* player and a greater capacity to interact. In many ways the effective embodied interaction and leadership characteristic of Balinese men's gamelan is equivalent of those 'mental states characterised by a loss of ego, a merging of action and awareness,' a 'narrowing of consciousness,' and a 'heightened sensation of control and awareness of one's physical self' described by Csikszentmihalyi. As I have shown above, using various examples from my own and others' research, a self-abandoned state of mind, accompanied by a heightened sensation of awareness and narrowed consciousness also unites men in highly exhilarated collective action during the performances in Corsica, Prespa Albania and Georgia.

Gendered notions of appropriate behaviour are seen as one of the main reasons why women fail to achieve an equivalent state of heightened awareness. In a similar fashion, insistence on a suppressed sexual demeanour, exclusion from public life and confinement to the home or to private life are seen as major factors in the lack of highly dramatic styles among the women singers of Prespa, Corsica and Georgia, or the story-tellers of North America. We might think that such a problem—of male musical creativity being evidence of men's higher originality and mastery in intellectual domains—holds in relation to pre-industrial, 'traditional' patriarchal societies of the Mediterranean or Asia but that, with modernisation and the acceptance of gender-equal ideologies by these societies, such a disparity will soon disappear. However, the situation is not much different in the west. Western popular (and art) music also grants the status of the greatest among great artists exclusively to men. In their examination of gender and cultural consecration in popular music, Schmutz and Faupel (2010) explored the factors that are likely to affect the possibility of female performers achieving consecrated status—that is, being recognised as a great artist or genius. The authors have concluded that 'in both direct and indirect ways, gender significantly shapes a performer's likelihood of consecration, leaving female artists at a disadvantage in this process.'⁴⁶ Schmutz and Faupel cite *Rolling Stone* magazine's special issue of 2003, which recognised the greatest albums of all time as selected by an 'electorate of experts, including nearly three hundred professional musicians, managers, producers, critics, historians, label executives and other prominent industry personnel,' to

⁴⁴ Benjamin Brinner, *Knowing Music, Making Music: Javanese Gamelan and the Theory of Musical Competence and Interaction* (Chicago: University of Chicago Press, 1995) 313, cited in Downing, 'Agency, Leadership, and Gender,' 66.

⁴⁵ Downing, 'Agency, Leadership, and Gender,' 66, 69.

⁴⁶ Vaughn Schmutz and Alison Faupel, 'Gender and Cultural Consecration in Popular Music,' *Social Forces* 89.2 (2010): 685.

conclude that artists who achieve the consecrated status of 'great' or 'pioneers,' and who achieved 'magic and transcendence,'⁴⁷ are by large, and sometimes exclusively, males.

The conclusions about the superior expressive qualities of some of the examples of men's vocal performances discussed above could be contested by instances from other societies in which females dominate in singing, such as, for example, in the Balkan musical traditions. In contrast to Corsican, Prespa or Georgian women, Bulgarian and Macedonian women are dominant in polyphonic singing. However, we should be cautious about advancing conclusions of female musical superiority in these societies. Bulgarian women's traditional singing itself has often been associated with purity and simplicity, albeit a powerful one,⁴⁸ but technical mastery, transcendent autonomous musicianship, self-abandoned state of mind and virtuosity are more readily associated with Bulgarian and Macedonian male instrumentalists.⁴⁹ Timothy Rice's observation is relevant here and resonates in cultures as remote from Bulgarian as the Balinese; with respect to Bulgarian traditional music, Rice wrote that talented women (as distinct from talented men) tried not to 'stand out from the crowd,' and the demands of traditional female demeanour limited their freedom to vary a song's structure to minor variations in melodic and rhythmic content.⁵⁰ It seems that there the same underlying state of mind is operating to create gender differences in music-making, although the implications and specific expressions of it vary across cultures. Today the notion of traditional female demeanour is the most powerful theoretical frame within which sex differences in music-making are explained. Indeed, society's expectations play a large role in individuals' and groups' development and self-esteem. However, I feel that if gender continues to be an important analytical frame in musicological research, it is unreasonable to exclude automatically the role of other factors in the formation of sex differences. Social pressures of proper gender behaviour and their effects on gender differences in music making should also be viewed within a wider comparative and interdisciplinary context, including alternative and complementary explanations.

Music, State of Mind and Evolution

In the following section I propose a possible theoretical frame for the interpretation of observed sex differences in music. I suggest that sex differences in music-making be analysed with reference to the mental states that men and women induce when creating and performing music on the one hand, and to deeper social-cognitive and evolutionary motivations for making music among women and men on the other. But, one might respond, music is culture-specific; it is unique and learned differently in each culture and historical context, and accordingly we cannot look for prehistoric and evolutionary universals. Here I am more aligned with a view of music which allows not only for music's purely aesthetic-artistic expressive function, but also

⁴⁷ Schmutz and Faupel, 'Gender and Cultural Consecration,' 685.

⁴⁸ Donna Buchanan, review essay, 'Bulgaria's Magical *Mystère* Tour: Postmodernism, World Music Marketing, and Political Change in Eastern Europe,' *Ethnomusicology* 41.1 (1997): 151.

⁴⁹ For example, *Le Mystère des voix Bulgares* conveyed a message of powerful women and indeed inspired many female musicians worldwide to perform their traditional polyphonic songs. But it should not be overlooked that this particular ensemble became popular for its performances of arrangements made by men.

⁵⁰ Timothy Rice, *May it Fill Your Soul: Experiencing Bulgarian Music* (Chicago: University of Chicago Press, 1994) 104.

for its central biological and neurological adaptive role in the evolution of the human species.⁵¹ Nathan Kogan, utilising William McNeill's notion of 'muscular bonding,' has proposed that music, and in particular dance, drill and rhythmic movement, must have increased the survival prospects of early hominid groups in comparison to non-dancing hominid groups.⁵² Such expressive activities would have created, in these scholars' views, the bonding and solidarity necessary for cooperative endeavours.⁵³ Considering music's role in human evolution, Steven Brown has suggested that music reinforced the collective identity of the group, which helped to strengthen group coordination, the formation of coalitions, collective thinking and the collective expression of experiences and emotions.⁵⁴ In particular, Brown argues that the design features unique to the music of human groups in contrast with animals' and birds' use of vocal calls—such as music's universally collective and communicative nature, pitch blending and metric coordination, as well as its neural and cognitive specificity⁵⁵—actually prove that music is a group-level natural selection mechanism that humans and hominids must have used for survival.⁵⁶ Carrying on the evolutionary vision of music, Jordania has also suggested that group rhythmic dance and pitch blending would have helped early Homo Sapiens to induce a particular state of 'battle trance,' necessary for survival purposes, such as securing scavenged food, scaring off other species, and later, perhaps for hunting.⁵⁷

Currently there is no sound evidence, whether neurological-psychological, archaeological and paleoanthropological or ethnographic, that women and men have different capacities in performing musically. Such studies have yet to be done in different fields of music psychology and ethnomusicology. Some studies already completed revealed gender differences in music processing among individuals with a western musical background. For example, adult men process certain musical information with their right brain hemisphere, while women process the same musical information bilaterally.⁵⁸ In yet another similar study of children, scientists found that several different types of brain responses to music are lateralised in the left hemisphere for boys and in both hemispheres for girls, similar to language.⁵⁹ This led the scholars to conclude that music processing changes in males as a developmental effect (left in boys and right in men), while in females it is more bilateral both in childhood and in adulthood. However, apart from many biases, cultural limitations and social factors that have to be taken into account

⁵¹ See, for example, Ian Cross, 'Music, Cognition, Culture and Evolution.'

⁵² William H. McNeill, *Keeping Together in Time: Dance and Drill in Human History* (Cambridge: Harvard University Press, 1995), cited in Kogan, 'Reflections on Aesthetics and Evolution,' 197.

⁵³ Kogan, 'Reflections on Aesthetics and Evolution,' 197–98.

⁵⁴ See Brown, 'Evolutionary Models of Music.'

⁵⁵ Isabelle Peretz and José Morais, 'Specificity for Music,' *Handbook of Neuropsychology* 8 (1993): 373–90; Oscar Marin and David Perry, 'Neurological Aspects of Music Perception and Performance,' *The Psychology of Music*, 2nd ed. ed. Diana Deutsch (San Diego, CA: Academic Press, 1999), 653–724.

⁵⁶ Brown, 'Evolutionary Models of Music,' 272. For a further discussion of the unique design features of human music-making, see Isabelle Peretz and José Morais, 'Specificity for Music,' *Handbook of Neuropsychology* 8 (1993): 373–90; Marin and Perry, 'Neurological Aspects of Music Perception,' 653–724.

⁵⁷ Jordania, *Why Do People Sing?* 98.

⁵⁸ See Stefan Koelsch, Maess Burkhard, Tobias Grossman and Angela D. Friederici, 'Electric Brain Responses Reveal Gender Differences in Music Processing,' *NeuroImage* 14.5 (April 2003): 709–13.

⁵⁹ See Stefan Koelsch, Tobias Grossman, Thomas C. Gunter, Anja Hahne, Eric Schröger and Angela D. Friederici, 'Children Processing Music: Electric Brain Responses Reveal Musical Competence and Gender Differences,' *Journal of Cognitive Neuroscience* 15.5 (2003): 688–89.

when analysing gender differences in neuro-imaging, it is unclear what the implications are of the discovered gender differences in the human brain for our understanding of female and male humans' capacities in musical creativity.

I agree with Brown that it is very difficult to distinguish 'what is a male-specific, sexually-selected genetic capacity from what is generalised male hegemony in most domains of culture.'⁶⁰ In fact, humans do not seem to me (or to many other musicologists) sexually dimorphic in their musical activities, and today women do the same musical activities as men. However, if music is a 'natural,' biological capacity central to the very emergence of human culture, as Cross asserts,⁶¹ is it possible that the two sexes might have had different uses for music in their daily survival tasks among our hominid ancestors, resulting in male 'hegemony' in most musical cultures? To answer this question, one needs a thorough comparative analysis of pre-industrial, and especially hunter-gatherer societies with their earliest forms of social and economic structures and their music-making, to which I cannot commit in the present article. Nevertheless, I will propose some avenues that might turn out to be useful for our theorizing in the field of sex differences in musicality.

One very important factor in the analysis of sex differences in musicality, and the one that Brown also points out, is 'gender differentiation at the task level, where music-making functions as a group coordination device in preparation for or during such tasks [i.e. different tasks assumed by different sexes].'⁶² But before internalizing this factor as the main reason for sex differences in music-making, I would like to reflect upon the four areas Brown distinguished, in which music must have functioned to increase group fitness and survival ability during the evolution of early humans: *group identity*, *cognition*, *catharsis* and *coordination*.⁶³ In almost all four areas, females and males seem to be involved equally. For example, 'group identity' is equally important to women and men in any culture, despite the fact that in many societies women are artificially (against their biological make-up) forbidden to form such collectives. Belonging to a group and music's function to mark the fact that many individuals belong to one unit is essential to the formation of social identities among both women and men.⁶⁴ Examples of this group definition abound in various cultures: women as well as men belong to and lead secret or religious societies, or organise groups such as working bees, and music is used to create emotional connection within the group.

The 'group cognition' role of music is reflected in music's ability to prepare individuals' minds for group action or group decision-making, an area in which women as much as men are active participants. Recall, for example, ritual songs, healing songs, birth songs, life-cycle songs which mark significant moments of community life such as weddings and funerals and in which women have the leading role; women calling men to action in the funeral laments of Corsica, or women's laments in Greece expressive of a collective female sentiment of protest.⁶⁵

⁶⁰ Brown, 'Evolutionary Models of Music,' 250.

⁶¹ Cross, 'Music, Cognition, Culture and Evolution,' 37.

⁶² Brown, 'Evolutionary Models of Music,' 266.

⁶³ Brown, 'Evolutionary Models of Music,' 258–61.

⁶⁴ For a discussion of this function of music, see Marcello Sorce Keller, 'Why is Music so Ideological, and Why do Totalitarian States Take it so Seriously? A Personal View from History and Social Sciences,' *Journal of Musicological Research* 26.2–3 (2007): 100–102.

⁶⁵ Anna Caraveli, 'The Bitter Wounding: The Lament as Social Protest in Rural Greece,' *Gender and Power in Rural Greece*, ed. Jill Dubisch (Princeton, NJ: Princeton University Press, 1986) 169–94.

'Group catharsis' and conflict resolution, similarly, do not seem to be sex-specific, and we can recall women's altered states of mind achieved through lamentations, songs for the resolution of conflict in the Anastenarian ritual involving trance and possession in Greek Macedonia,⁶⁶ and women's possession and healing songs for appealing to deities, God, or current political leaders in Georgia.⁶⁷

The fourth aspect of group function that music reinforced, according to Brown, is 'group coordination.' This aspect is the most important for my argument since, possibly, this is the area in which women might have contributed least significantly during our evolutionary past. Music reinforces, indeed creates, 'group coordination' at many specific levels, such as working (both during and in preparation for work) and foraging, as in many African or European cultures, but also in more male-biased activities such as battle preparation and hunting expeditions, as in many ancient and modern societies. In this latter context, the 'group coordination' aspect of music's function coincides with Jordania's concept of 'battle trance,' during which a group uses rhythmic music and possibly dance to enhance collective identity and achieve a form of unity.⁶⁸ This state of mind was induced in the most dramatic situation of human survival: that of getting food away from much stronger predators. Similar ritual activities are used in many traditional cultures to enhance a man's ability to kill and predate, for humans are biologically much less skilful killers and hunters than the other predators that they often hunt. This is the only instance of music's role in group function in which females might have had significantly less involvement than males.

A more modern example of music's use to create 'group coordination' is music's role in bonding and pumping up soldiers psychologically in preparation for combat missions. In her book on the origins of war, Barbara Ehrenreich writes that drilling and rituals of sacrifice have been used in many cultures to alter men's states of mind so that they felt as one organism, 'part of something larger than oneself,'⁶⁹ when they went to war to kill other people. Ehrenreich refers to William McNeill's proposition, based on his battle experience, according to which 'A rhythmic bonding of individuals develops, which, he speculates, is linked to the dance and to the noisy, foot-stamping confrontations of pre-historic humans with animals.'⁷⁰ Ehrenreich has argued that origins of war lie in the human ancestors' transition from a small animal-hunting and food-gathering species to the most powerful and dominant species on the earth.⁷¹ It is interesting in this respect, that men, rather than women, have used homo-sociality and homo-sexuality to induce such state of unified mind in preparation for battles. Will Roscoe, for example, draws on examples of warriors having homosexual relations with the most revered

⁶⁶ Loring M. Danforth, 'The Resolution of Conflict through Song in Greek Ritual Therapy,' *Contested Identities: Gender and Kinship in Modern Greece*, ed. Peter Loizos and Evthymios Papataxiarchis (Princeton, NJ: Princeton University Press, 1991) 98–113.

⁶⁷ Kevin Tuite, 'The Violet and the Rose: A Georgian Lullaby as Song of Healing and Socio-Political Commentary,' *Cultural Paradigms and Political Change in the Caucasus*, ed. Nino Tsitsishvili (Saarbrücken: Lambert Academic Publishing, 2010) 67–87.

⁶⁸ Jordania, *Why Do People Sing?* 98.

⁶⁹ Barbara Ehrenreich, *Blood Rites: Origins and History of the Passions of War* (New York: Metropolitan Books/Henry Holt, 1997) 183.

⁷⁰ William H. McNeill, *The Pursuit of Power: Technology, Armed Force and Society Since A.D. 1000* (Chicago: University of Chicago Press, 1982); William H. McNeill, *Keeping Together in Time*, cited in Ehrenreich, *Blood Rites*, 184.

⁷¹ Ehrenreich, *Blood Rites*, 22.

berdache (gender-crossing fighters) in order to obtain their fighting spirits.⁷² A recently observed and analysed example of the use of music and rhythm in preparation for combat is Jonathan Pieslak's study of American soldiers' use of music in Iraq.⁷³ Maori *haka* might provide another, more traditional and powerful example.⁷⁴ It is true that women were involved alongside men in rituals and dances that prepared warriors for a battle, as *haka* exemplifies.⁷⁵ Nevertheless, it is clear that ultimately fighting and the preparatory transformation of the mind was essentially an organised male activity, including women only when necessary.

If we accept this evolutionary view of music, we can imagine today's surviving music cultures as the diverse ramifications of our evolutionary capacity and need for music-making. Therefore, the explanation for the differences between men's and women's music-making might also lie in the evolutionary past, during which men's coalitions and bonding for reasons of survival— success in inter-group or inter-species battles, scavenging and hunting—might have required stronger forms of collective unification and self-abandonment among men than among women.

How can we relate the collective music-making of the remote past to the relatively recent forms of individual and group music-making? While it is not my task in this article to trace and analyse details of hereditary links between the ancestral evolutionary past and the mental states achieved by men and women in modern society, I nevertheless suggest that, since music is a specific evolutionary and neural domain, it is very likely that many diverse and recently emerged forms of individual and group music-making still use those cognitive capacities and states of mind and forms that were characteristic of collective music-making in the human species' evolutionary progress towards culture. Specifically, it seems useful to examine whether men's perceived greater capacity for 'peak experience' in contemporary settings can be related to men's greater use of music in contexts of survival confrontations in the course of our species' evolution. While today we do not need music for such ends, recent research like Pieslak's demonstrates that music is still a universal and specific human survival strategy used in specific contexts in which a collective mental unison is required.

Conclusion

It is obvious that humans of both sexes needed survival as a group, hence most of the contexts and capacities for making music among female and male humans are equivalent. Ethnographic evidence also suggests that men's and women's music-making has often occurred collectively as a joined activity in most cultures. Nevertheless, if we look at the enduring disparity between women's and men's musical practices comparatively and in the context of evolutionary theories of the origins of music, it might be suggested that perhaps men's and women's roles in survival and their respective use of music for this end differed in some contexts during the course of evolution and beyond. The state of mind accompanying women's (or mixed) group music in

⁷² Will Roscoe, *Changing Ones: Third and Fourth Genders in Native North America* (New York: St. Martin's Press, 1998) 9.

⁷³ Jonathan R. Pieslak, 'Sound Targets: Music and the War in Iraq,' *Journal of Musicological Research* 26.2–3 (2007): 123–49, and his longer study *Sound Targets: American Soldiers and Music in the Iraq War* (Bloomington: Indiana University Press, 2009).

⁷⁴ Wira Gardiner, *Haka* (New Zealand: A Hodder Moa Book, 2010), first pub. 2007, reprinted 2011.

⁷⁵ Gardiner, *Haka*, 73–82.

life-cycle or communal events, despite its intensity, might have occurred in safer environments compared to the state of mind evoked by music used in dangerous survival situations, such as confrontations with predator species or hostile hominid groups. The latter would require more effort of coordination, interaction with leadership, and a more strenuous use of bodies, including physical risk-taking and sacrifice.

Therefore, we might propose, that the state of mind induced by women's music-making did not call for the immersion and transformation of self into a collective identity such as is, for example, characteristic of combat situations. In such critical circumstances, the sense of belonging to the group might facilitate essential subordination, lesser self-consciousness and smoother leadership, and the fostering of a confident interactive spirit—qualities that resonate with Downing's description of the quality of *gaya* in Balinese men's gamelan, a quality she found to be missing from many female gamelan ensembles. Perhaps the same motivational and cognitive forces are at work when men in Georgia or Corsica sing and feast in a self-abandoned and ritualised manner for hours, while their wives, sisters and daughters choose more flexible and less-engaging roles; or when men in western societies often spend far more hours than women mastering an instrument or writing music in ensembles or individually.

The situation is not simple and straightforward, for not all male musicians spend more hours on making and mastering music than women do and, as I mentioned at the beginning of this article, talents, motivations, and achievements differ among individuals of either sex and various sexual orientations. Nevertheless, it seems that sex differences in musical creativity are significant and might go to the very roots of prehistory and even human evolution. At the least, such an analysis should be seriously considered along with more constructionist theories. Constructionist and evolutionary interpretations of persisting gender differences are not mutually exclusive, but complement each other. While the quest for universal gender models is often avoided in musical scholarship for political or other methodological considerations, it seems to me that methodologically linking ethnographic evidence, socio-evolutionary theorising and neuro-cognitive research findings might provide a useful interdisciplinary frame for developing the conclusions proposed in this article.