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A New Interdisciplinary Approach to the Study of the Origins of Traditional Polyphony

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Abstract
The article discusses a new model of the origins of choral singing in the context of human evolutionary history. Hominid interaction with predators is seen as a crucial force in the evolution of human morphology and behaviour. Group singing and dancing, with body painting and the use of masks, are perceived as critical elements of the strategy to deter predators and to put hominids into an altered state of consciousness. In this state, humans do not feel fear and pain and are ready to sacrifice their lives for the common goal. This psychological condition is still important to many human group activities, particularly in religion and the military. The mosaic distribution of polyphonic traditions is discussed in the context of the origins of language and articulated speech.

Keywords
Origins of Polyphony; Dissonance in Traditional Polyphony; Comparative, Cross–disciplinary and Multidisciplinary Approaches in Ethnomusicology; Origin of Speech; Human Evolution;

Introduction: The Problem of the Origins of Polyphony at the Turn of the Millennium

The origin of polyphony is one of the biggest problems in musicology. The ability of human groups to sing in complexly organised musical texture has captivated the attention of musicians and cultural historians for centuries. Apart from the scholarly importance, this phenomenon has also acquired a wider ideological dimension. Polyphony was considered a hallmark of European high musical culture. As for the problem of the origins of this phenomenon, it was widely believed to be a cultural invention by medieval European Christian monks. This belief remained unshaken for centuries despite the occasional appearance of contradicting facts[2].

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[2] Among these facts, for example, was the discovery of polyphony among Polynesians during their first meetings with Europeans in the 1770s (see Burney 1975: 84; Beaglehole, 1967: 944). Such facts, which were uncomfortable for the dominating paradigm, were declared untrustworthy and were neglected as a result (see Kaeppler et al., 1998: 14).

The paradigm of the medieval Christian invention of polyphony continued well into the 20th century, until the newly developed field of comparative musicology proposed a different model for the birth of polyphony. Due to the presence of evidence of polyphony among non–European peoples, the representatives of the great Berlin school of comparative musicology came to the conclusion that polyphony was not invented in the IX century by Christian monks, but rather was born earlier in traditional music and later spread to the European professional music (see Schneider 1934–1935). Proposing a new paradigm has never been a safe issue; this was particularly the case in Nazi Germany, and Schneider's book was publicly burned, along with other banned literature that contradicted the idea of white European supremacy.

In regards to the origins of European professional polyphony the new paradigm allowed two possibilities. According to the first, polyphony was born somewhere outside of Europe, and reached Europe later via cultural contacts (the popular research trend of the time was the model of "cultural circles"). The main proponent of this idea was Marius Schneider, who considered polyphony to have been born in South–East Asia (Schneider 1934–35). According to another point of view, the main source for the European professional polyphony was the archaic polyphonic traditions of local, European peoples (Collaer 1960). In terms of the birthplace and age of polyphonic singing, there were various suggestions. Victor Lederer proposed that polyphony was born in Northern Europe (1906), Vasil Stoin suggested that polyphony was born in the mountainous regions of Bulgaria and later spread to other countries of the Balkan Peninsula and the rest of Europe (1925). Dimitri Araqishvili did not claim that polyphony spread to the rest of the world from Georgia, but was sure that it was a local pre–Christian invention (1925).

During the comparative period of development in our discipline (1880–1950), the dominant interest lay in "big themes". It was not only the origins of polyphony that comparative musicologists were researching. Works on the classification of scales and musical instruments, or the origins of music itself, together with other theoretical and historical themes, were published in this period. However, most of the works from this period had serious problems. There was an insufficient number of high quality regional studies of world musical cultures, so the new global theories were mostly based on a mixture of inferior facts and second– and third–hand incomplete information[3]. Even worse, comparative studies often made ambitious

[3] For example, the representatives of comparative musicology, Siegfried Nadel and Marius Schneider, who wrote extensively about the possible interactions between Georgian folk and European professional polyphony (Nadel, 1933; Schneider, 1940,

classifications of various musical cultures from the "lowest" to the "highest" forms, and the adjective "primitive" was routinely used in reference to many non–European cultures. This trend became particularly untenable after the events of the Second World War.

From 1950 onwards the situation changed drastically. A revolutionary new paradigm, based on the methodology of cultural anthropology, tipped the balance to the opposite end. Even the name of the scholarly field changed, from "comparative musicology" to "ethnomusicology" (see Merriam 1960). The existing works that were dedicated to the big theoretical and historical themes and based on comparative methodology were severely criticised. Wide ("horizontal") comparative works were replaced by deep, "vertical" regional studies of a single culture, based on the long–term participant observation model of fieldwork (see: Merriam 1977; Hood 1960, 1971; Nettl 2005).

The new studies were written by experts who, as a rule, were proficient not only in the musical traditions, but in the language, history, cuisine, psychology and many other intimate parameters of the studied culture. The comparative method was discredited and mostly rejected along with the majority of the comparative studies of pre–war Germany. The problem of the origins of polyphony, very much like the other "big problems" of musicology, disappeared from the mainstream publications. Even during the explosion of interest in the origins of music (the first decade of the 21st century), despite the obvious relevance of an ethnomusicological perspective on this problem, mainstream ethnomusicology remained at a "safe distance" from this "big" topic (although see Grauer 2006, 2007; Jordania 2006, 2011). The most ambitious research project of this era, Alan Lomax's "Cantometrics", was created outside of academia and was mostly criticized by professional ethnomusicologists.

By the end of the 20th century the situation started to get more complicated. Some ethnomusicologists started voicing concerns about the absence of "big themes" in the discipline and started questioning the total rejection of comparative methodology from mainstream publications. One of them was Tim Rice, the head of the biggest ethnomusicological department in the USA, UCLA. During the 2001 ICTM Conference in Rio de Janeiro, Tim Rice characterized the rejection of comparative methodology after 1950 with the phrase "the baby was thrown out together with the bath water" (personal communication on July 9th, 2001). The 2001 ICTM World conference in Rio de Janeiro itself hosted the first theme about the possible comeback of the comparative methodology, which received a less–

1951, 1961, 1969), never visited Georgia, let alone attempted such arduous endeavours as learning the Georgian language or organising fieldwork in Georgia.

than–enthusiastic response from mainstream ethnomusicologists. This concern was well defined in a polemical article by Tim Rice himself, published almost a decade later in the central journal of the field, *Ethnomusicology*: "Disciplining Ethnomusicology**:** A Call for a New Approach" (Rice 2010). Sympathy towards comparative methodology is quite evident in the works of another prominent American ethnomusicologist, Bruno Nettl (Nettl 2005: 60–73). Nettl noted the returning sympathies towards the comparative method among some scholars in the 1970s, although we cannot by any means talk about the acceptance of comparative methodology in the mainstream ethnomusicology of that time.

Today we are possibly on the verge of the third period of development of our discipline. The return of the comparative perspective seems a logical step after the long period of extensive regional studies. Nettl notes of the comparative method that, by the year 2000, "it is clearly here again, though without an explicit methodology and usually without being named" (Nettl 2005: 63). Some ethnomusicologists and musicologists (among them Steven Brown, Michael Tenzer, Pat Savage), active supporters of the official return of comparative methodology, have tried to bring it back to life during recent years, seeking closer contacts with a broader circle of scholars from several fields. The first meeting of the supporters of the revival of the comparative method was held in Vancouver, Canada, at the conference "Analytical Approaches to World Music" in May 2012.

Of course, if we are to compare regional ("vertical") and comparative ("horizontal") methods, we have to acknowledge that deep regional studies are the "backbone" of ethnomusicology, because regional studies can certainly exist without comparative studies, whereas comparative studies depend totally on the number and quality of regional studies (Hood 1960: 233). The selection of methodology for any research project should naturally depend on the research aims of the project. A decent research project on topics with a broader perspective, such as the phenomenon of the drone, the distribution of string instruments or the origins of round dances, is impossible to conduct without a wide comparative approach. Research into the origins of polyphony is one of the obvious cases where the comparative method is absolutely necessary.

Furthermore, during my research I came to the firm conclusion that, for understanding the processes that led to the origins of polyphony as we know it, the comparative method alone is not enough. Studying the amazing variety of vocal polyphonic traditions throughout the world and creating stylistic parameters for their comparison is in itself a formidable task, but it is only the first step of

the research. In order to gain an idea of the historical forces that led to the existing picture of the distribution of polyphonic styles, I had to go much further. I gradually entered the realm of cross–disciplinary and interdisciplinary research, including such widely ranging spheres as physical anthropology, speech pathology, primatology, and even military psychology.

The conclusion that I reached during over 30 years of research proposed a complete change in my understanding of the roots of choral polyphony. According to my new model, the phenomenon of vocal polyphony is not a late cultural invention, but an important part of the hominid[4] survival strategy. This strategy was developed by the forces of natural selection. The tradition of vocal polyphony, according to my model, was an integral part of the wider defence system from predators, with extremely ancient origins. Ever since, the development of articulated speech polyphony has been gradually disappearing throughout the world[5]. My research resulted in a number of unexpected proposals and bold predictions, not only in ethnomusicology but in several other disciplines as well, from the origins of human intelligence, language and speech to the distribution of stuttering and dyslexia.

Now, after the short introduction to the history of research on the origins of polyphony, let us discuss the main characteristics of the new possible solution to this problem. As I will be trying to present the results of a very wide circle of problems, it is inevitable that some important ideas will not be mentioned, some will be presented very briefly (with due references to other publications where the full accounts can be found), and some topics will be granted a more detailed account.

Comparative Study of the Origins of Polyphony and Beyond

A comparative study of the variety of polyphonic traditions in the world was the starting point of my research. As I soon found out, apart from two editions of the book *History of Polyphony* by

[4] The term "hominid" is traditionally used by evolutionists to define a variety of ancestral forms of *Homo sapiens*. In recent years some scholars have started using this term to define a wider circle of species, including extant and extinct apes. They suggested the term "hominin" to be used to denote human ancestral forms. In this article the author uses the term "hominid" in the traditional understanding, designating all forms ancestral to *Homo sapiens*.

[5] Russian-Jewish scholar Miron Kharlap was first to propose the idea of the initial wider distribution of archaic forms of polyphony and their subsequent loss (Kharlap 1972). But for Kharlap music and polyphony were not very old phenomena, as he believed music was born out of human speech.

Marius Schneider (1934–35 and 1969), no other major work was available where the information about various polyphonic cultures was gathered. When Schneider re–published his 1934–35 book with a newly added chapter in 1969, for some reason he did not include many of the polyphonic traditions that were known by that time. I used a variety of strategies to fill the gaps in my knowledge of the polyphonic traditions in various regions of the world. Organising special conferences (from 1984 onwards) on traditional polyphony provided a much needed breakthrough, as I was able to gain knowledge not only from the papers presented at the conferences but also from direct contact with the experts from various cultures. I have to say that the process of gathering the information about various polyphonic traditions is still ongoing, and I am sure will continue while I am alive.

It was an important methodological breakthrough for me when I classified various elements of musical traditions according to their potentially stable or mobile character (Jordania 2006: 189–196, 2011: 47–50). Based on the analyses of several examples of intercultural exchanges (involving Georgian, Middle Eastern, African and Polynesian musical examples), I came to the conclusion that some elements of traditional musical culture can be extremely fluid and mobile (for example, melodies and instruments). On the other hand, I proposed that some elements were extremely stable. Two of the most stable elements were the type of polyphony (drone, ostinato and parallel polyphony), and the intervals that were predominantly used as the "harmonic ethno–ideal of polyphonic culture" (dissonant seconds or sevenths, or consonant thirds and sixths) in these cultures.

The first major breakthrough in understanding the reasons behind the mysterious stratigraphy of monophonic and polyphonic cultures was the understanding of the correlation between the distribution of vocal polyphony and the physical anthropology data (Jordania 1988, 1989)[6]. It was nothing short of a shock when I first read in the publications of the prominent Russian physical anthropologist Valeri Alekseyev that populations of the Caucasian Mountains and the Dinaric Mountains in the Balkans were extremely close in their craniological parameters. Many other such correlations followed over the next several years, to the point that I was able to predict the presence of polyphony according to the physical anthropology data (for example, this happened in the case of North Japanese

[6] Marius Schneider was the first to notice that the distribution of choral polyphony and the physical anthropology data were coinciding (Schneider 1934–35, 1951, 1969). For a scholar interested in the worldwide distribution of polyphony, this is virtually impossible not to notice. On the other hand, Schneider believed in the late cultural origins of polyphony and, in my opinion, he did not go deep enough to reach the primary causes of the human tradition of group polyphonic singing.

Ainus, and the mountain populations of North and Central Vietnam). My meeting with the Georgian physical anthropologist Malkhaz Abdushelishvili and Russian anthropologist Valeri Alekseyev in 1985 was the first serious cross–disciplinary contact in my search for the origins of human choral singing. Valeri Alekseyev's untimely death in 1991 cut short our plans for interdisciplinary collaborative work. My 2006 book "Who Asked the First Question? Origins of Human Choral Singing, Intelligence, Language and Speech" is dedicated to the memory of Valeri Alekseyev and Malkhaz Abdushelishvili.

I cannot elaborate here on the correlation between the distribution of vocal polyphony and related physical anthropological types. This is a huge sphere in itself and those who are interested might find a couple of examples of this correlation in my English language books (Jordania, 2006, 2011, 2015). For those who want to read the whole story, I would suggest my Russian language article in the Soviet journal *Soviet Ethnography*, written at Valeri Alekxseev's request, or my first book, also published in Russian (Jordania, 1988[7], 1989).

In 1995 I arrived in Australia. At about the same time a new communication tool, email, began to revolutionize the interaction between scholars. By the time my second book came out (Jordania, 2006) my knowledge of world polyphonic traditions was much wider than in 1989.

Is Polyphony Appearing or Disappearing?

For the development of the current model of the origins of polyphony the crucial moment came when I started compiling the facts for two contradicting tendencies: (1) the disappearance of polyphonic traditions, and (2) the appearance of polyphonic traditions. I soon realized that there was actually only one historical tendency: the **disappearance** of polyphony. I was able to find plenty of examples of the disappearance of polyphonic traditions all over the world[8], but I could not find a single example of the appearance

[7] This article from "Soviet Ethnography" was soon translated and published in Bulgarian, in the journal *Musikalni Xorizonti* (Jordania 1989a)

[8] Here are a few facts on the disappearance of polyphonic traditions: In Italy, Lombardy, singing in seconds was documented in the 15th century, but later disappeared (see Ferand 1939). In Lithuania, the unique vocal polyphonic style *sutartines*, based on the almost constant use of secondal dissonances, has disappeared over the last two centuries (Rachiunaite-Viciniene 2002). In Latvia, the tradition of three-part drone singing, recorded by A. Yurian at the end of the 19th century, has disappeared (Yurian 1907). In Estonia, a tradition of drone polyphony was recorded by Tampere at the beginning of the 20th century, but disappeared later (Tampere 1938). In northern Russia, a unique tradition of duet and trio singing with

of vocal polyphony in a previously monophonic traditional singing culture. So it became clear to me that the historic link between monophony and polyphony was working in the opposite direction from what had been believed for centuries: the initial musical culture of humanity was most likely based on polyphonic singing, and for some reason it gradually disappeared over centuries and possibly millennia. This was a complete change from the widely accepted idea of the relatively late cultural origins of polyphony from the natural development of monophony.

Before we start discussing the reasons for the gradual and mosaic disappearance of choral singing in various regions of the world, we firstly need to discuss the evolutionary forces that prompted our ancestors to start singing in harmony. This problem is very close to the problem of the origins of music, since the evolutionary forces that prompted our distant ancestors to start singing in harmony were very close to the forces that prompted our ancestors to start singing at all.

To be brief, I will go straight to the core points:

I was the first to pay attention to the fact that most of the singing species on our planet live in trees (Jordania 2006: 303–306). I suggested that this was due to the fact that singing on the ground is an extremely costly activity, as singing attracts predators. Furthermore, when the singing species, which spend most of their time in the trees and can fly away from danger, go down to the ground for a short visit, they become silent (Jordania 2006: 305);

I proposed that our human ancestors were most likely already a singing species when they came down from the trees (this happened,

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independent melodies was recorded by E. Gippius in the 1920s, and was never heard again (Zemtsovsky 2000: 758). On Sicily, according to the archive recordings, the western region was as polyphonic as the rest of the Mediterranean island, but after the 1968 earthquake the tradition seems to have been lost (Macchiarella 2008: 142). In Macedonia, according to local ethnomusicologists, the tradition of Macedonian singing in dissonant seconds disappeared between the 1950s and 1980s (Bicevski 1986). In California, USA, according to historical sources and archival recordings, interesting forms of vocal counterpoint that were present among South Californian Indians also disappeared (Keeling 2001: 418). In Taiwan, according to the archive recordings, the small mountain tribe Saisat had a tradition of singing in parallel fourths that disappeared within the first few decades of the 20th century (Tsang-houei 2002: 525). In Indonesia, according to Dana Rappoport, part of the traditions of vocal polyphony in Central Sulawessi have disappeared over recent decades (Rappoport 2004). In Polynesia, according to A. Kaeppler, the tradition of six-part polyphony on Tonga was eventually lost, and partly replaced by late European three-part singing (Kaeppler 1990). In Africa, according to Simha Arom, the tradition of vocal and instrumental polyphony has been declining among pygmies from the 1970s (personal communication, letter from 7th August, 2007). In Georgia, cases of the loss of the traditions of vocal polyphony are documented in Meskheti and Saingilo Magradze 1986; Jordania 2000: 827. For more detailed information and more cases see Jordania 2006, 2015.

as we know today, between 4 and 7 million years ago). Amazingly, humans are the only ground–dwelling species that sing (another neglected fact). On the other hand, there are thousands of singing species, including singing primates that live in the trees (for example, gibbons sing, even in family duets and groups. See Geissmann 2000).

As we know, apart from human ancestors, the ancestors of other big apes also came down from the trees. Even if they were singing species at the moment of transition, it is very likely that, following the life–saving strategy of tree dwellers that visit the ground, they would become silent. So the crucial question for us to answer is not why the ancestors of our closest living relatives stopped singing (this is clear – for survival), but why our ancestors did not stop singing. To answer this question, we will look to another sphere, the sphere of defence strategies against predators in the animal kingdom.

Vocal Polyphony and Human Defence Strategies

Contrary to popular belief, not all animal species try to conceal themselves in order to avoid predators. Some species do the opposite: they try to be very visible, noisy, and even smelly. For this purpose they develop bright, colourful or striped bodies, they try to look big, they make hissing, growling, and clicking sounds, and they develop an unpleasant and constant bodily smell. With their easily noticeable appearance, noisy behaviour and smell, they try to communicate to would–be predators that they are not afraid of them, and predators would be better to leave them alone. For this purpose they even developed specific style of locomotion – an awkward, sluggish walking style, and fearless behaviour (as a rule they do not run away from predators). Such animal species are known as "aposematic species" (Ruxton et al. 2004).

Examples of aposematic species are brightly coloured snakes and spiders. They often make hissing, rattling or clicking sounds to warn others to leave them alone. Aposematism among mammals is not very well studied (although see, for example, Caro 2009), but the skunk provides a good and widely known example. Not many people know that, before using its deadly spray, the skunk goes through the routine of aposematic display: feet stomping, waving its big and highly visible bushy tail, standing on two legs to look taller, and making growling sounds. Apart from these display features, the skunk is constantly accompanied by a musky smell. In terms of behaviour, as with other aposematic animals, skunk moves slowly and does not try to run away from predators. All these are the elements of aposematic display aimed at intimidating the predator.

After learning about the behaviour of aposematic animals, I proposed that, following their descent from the trees, humans started using the aposematic strategy of survival (Jordania 2011: 182–196). This was another completely new proposition, as humans had never been seen in the light of aposematic behaviour. Apart from behaviour, the aposematic strategy gradually changes an animal's morphology. The aposematic nature of our ancestor's behaviour is able to explain plenty of human morphological and behavioural peculiarities: human bipedalism, long hair on the top of our heads, long legs, or the use of high military helmets could have developed in hominid/early human evolution to create the appearance of being taller (Jordania 2011: 104–105). The use of body painting, clothes and masks can be explained as efforts to look more intimidating (Jordania 2011: 106–107). The human instinct to freeze in the most critical situations is also very characteristic of the defence strategy of aposematic animals (Jordania 2014: 179–182). Besides, humans are also known for a strong bodily smell, which does not exist among the cryptic species (for example, cats. Jordania 2014: 170–173). And of course, singing in a group, accompanied by stomping, clapping, and synchronized body movements, makes a highly effective intimidation tool (think of something like a Maori Haka, traditionally performed in order to intimidate the opponent before a battle).

I want to mention, without going into details, another topic that is extremely important for evolutionary theory – interaction between the aposematic strategy and the strategy of sexual selection. Most human morphological and behavioural characteristics were explained by Darwin with the help of sexual selection (Darwin 1871). According to his theory, most of the colourful and oversized additions to animal bodies, as well as singing and dance–like body movements, were developed in the animal kingdom in order to attract the attention of the female. But evolutionists must remember that aposematic display is based on exactly the same principles: the display of colours, oversized additions to the body, singing and dancing. So proponents of sexual selection theory have to take into account the possible aposematic nature of such displays. When looked with an unbiased eye, it is possible to see that, even in the case of the peacock, the classic symbol of the power of sexual selection, the magnificent tail (known as the "train") was not developed by the forces of sexual selection. A seven–year–long study of the behaviour of peacocks in Japan came to the conclusion that peahens do not pay any attention to the male display of the tail (Takahashi 2008). Readers can see a detailed account of this fascinating topic in my other works (Jordania 2011: 192–196, 2014: 86–92). It is interesting that in aposematic species females are often cryptically coloured because they have to

stay with the young. Symptomatically, in the species where males take care of the young, females are usually more conspicuous and males are cryptic (Ruxton et al. 2004)

Let us return to the loud rhythmic group singing of our distant ancestors and discuss a feature that brings us to the sphere of military psychology. Loud group singing, apart from the intimidation of predators and competitors, had another, possibly even more important function: it put our ancestors in an altered state of consciousness. In this state, hominids forgot about their individual interests and were totally dedicated to the interests of the group. This specific state, which I call the "Battle Trance" (Jordania 2011: 98–102) might occur both in men and women, and can occur instantly (for example, when a child is attacked by a predator and a parent goes into all–out fight without any thought for self–survival), or can be induced by various means, most importantly by loud rhythmic collective drumming–singing–dancing sessions. Such sessions are very well known to ethnographers from an array of traditional societies as preparation for military activities. Even in contemporary armies, the exhaustively long rhythmic marches are the primary force that turns new recruits into killers who are ready to follow any order (McNeil 1995). In the state of the battle trance, soldiers do not feel fear and pain; they can do extremely altruistic things (for example, sacrifice their life for others), but they can also do extremely violent things (for example, participate in the mass killing of civilians. See Jordania 2014: 184–189). Another characteristic feature of this state is that if combatants are in a deep trance they might have partial or full amnesia of critical events. This extremely important and powerful psychological phenomenon has been studied to a surprisingly insufficient extent.

American ethnomusicologist Jonathan Pieslak studied the use of music among American combat forces positioned in Iraq, and came to the conclusion that music plays an extremely important role in the military (Pieslak 2009). Apart from the use of music for relaxation and socializing, which comes to mind first when thinking of music in the military, soldiers use music for much more practical purposes. Very much like in traditional societies, contemporary military forces also often use group dancing before commencing their combat missions. Taking advantage of the existing technology, contemporary military forces tend to listen to loud recordings of rock songs. Impressed by the importance of music in soldiers' lives, American actor and soap–opera writer Tom Wiggin started a campaign to distribute personal MP3 players to all soldiers stationed in Iraq and Afghanistan (Villarreal 2010).

We do not have the space here to discuss the evolutionary importance of loud rhythmic music in the origins of such human

institutions and sentiments as religion and patriotism (see Jordania 2011: 102–103). One factor seems obvious: all such group activities that use communal singing have deep connections to the ancient evolutionary role of music. Music is a powerful medium to connect individual humans via changes in brain chemistry (Benzon 2001: 23), leading them to experience a certain exhilaration when the feeling of individuality dissolves into a common Collective Identity.

Sounds of Primordial Polyphony

Now I would like to devote a couple of pages to the discussion of the musical side of my model. In several books I proposed that the initial loud and precisely rhythmically organised music was based on very specific dissonant intervals (Jordania 2011: 110–111, 2014: 162–165).

Singing in harmony makes the overall sound more robust, creating the impression of a larger and more imposing group, which was the exact aim of singing for our hominid ancestors. Professional musicians know that there are several different ways of singing in harmony. You can sing in parallel thirds and parallel sixths, and this will lead to a nice relaxing harmony, prevalently used in classical and contemporary pop music. Parallel fourths and fifths make a very different sound – rough and somehow hollow – early Christian liturgical music and rock music are ardent users of this harmonic element. Singing in dissonant intervals, particularly seconds, creates the most startling, the most robust, and the most impressive overall sound. These characteristics make singing in seconds the best possible option for creating a loud, attention–grabbing and intimidating sound[9]. Dissonant sounds would have been perfect in order for our ancestors to intimidate predators.

In my 2011 book I suggested that singing in dissonant seconds was created by the forces of natural selection, and that the tradition of singing in seconds was taken by our distant ancestors from their African ‘cradle’ to the different regions of the world. Most importantly, I also suggested that the remnants of this primordial singing style still exist in the most isolated regions of the world (Jordania 2011: 111–112). Many of my colleagues probably reject this possibility offhand because of the sheer amount of time involved in this model. I suggest checking the existing facts before rejecting this idea.

[9] It is no accident that car horns are often tuned so that they create the most dissonant sound, often the interval of a second, as sharp dissonances are able to grab attention more quickly.

To test this possibility, we need to search for a specific polyphonic style with a loud and piercing sound and very sharp dissonances. And most importantly, if this singing style is an ancient survival technique, examples of this style must be scattered in the geographically most isolated places (like mountain ranges, islands, large forested regions, continental fringes), and must be present among totally unrelated cultures.

Now, if we look at the stratification of singing styles all over the world (see Jordania 2006: 30–176; or, to hear sound examples, see Jordania 2015), a very specific polyphonic style comes to our attention. This is a piercingly loud singing style, based on the maximally dissonant acoustic interval of the second. Even more precisely, this interval is often between the major and minor seconds, measuring 14–16 hertz. This is "the most dissonant dissonance" – the neutral second, known in ethnomusicology under the German term 'Schwebungsdiaphonie' (lit.: "rough sound," "rough harmony" Messner 1988, 2013).

Another extremely important fact is that singing in this style tends to be distributed in the most geographically isolated and distant regions of the world – in Tibet, the mountain ranges of the Hindu–Kush, the Caucasian and Balkan mountain ranges, the North Vietnamese and Taiwanese mountains, South–West China's forest–covered mountains, the hard to reach mountain regions of Central Papua New Guinea, some of the islands of Indonesia and Melanesia, the swampy forests of East European Polesie, the fringes of Europe in the Baltic region, in isolated pockets of Africa, and among the North Japanese aboriginal Ainu people, inter alia (Jordania 2011: 110–111). The amazing similarity between the polyphonic styles of such geographically and culturally isolated regions strongly suggests that these scattered traditions of dissonant polyphony might be remnants of a common ancestral singing tradition of humanity. The development as a simple coincidence of such a specific polyphonic style independently, by so many differing cultures, is virtually impossible to imagine.

We know that the striking resemblance between Balkan and Indonesian traditions of polyphony left the brilliant Dutch ethnomusicologist Jaap Kunst totally astonished[10] He published a book in

[10] The similarity of the stylistic elements and sounds between these traditions is amazing. When, in the 1980s, Austrian-Australian comparative musicologist Florian Messner, following in Kunst's footsteps, played a recording from Bulgaria to Indonesian villagers, the Indonesians were sure that this was a recording made in a neighbouring village, and the reaction of Bulgarian villagers was exactly the same upon hearing a recording of the Indonesians' polyphony. I can also say that, although I have been studying these polyphonic styles for years, I still struggle to distinguish some of them from the others.

1954 on this subject, in which he tried to substantiate a farfetched hypothesis of a major prehistoric transcontinental migration from the Balkans to Indonesia. From my point of view, the central problem with Kunst's hypothesis is that the mentioned parallel between the Balkans and Indonesia is **only one of many such parallels**: the same style of dissonant–based harsh singing is present in many geographically isolated places. Scholars universally agree that the phenomena that are predominantly present in geographically isolated regions are most likely to be the most ancient (Nettl 2005: 320–338; Sachs 1940: 62). A wide distribution, on the other hand, often points to the late distribution of a phenomenon – see the examples of the distribution of contemporary phenomena, such as pianos, guitars, mobile phones, or cars. The distribution of a similar phenomenon in a few isolated village communities in Tibet, Papua New Guinea or Central Africa is a much more potent indicator of ancient beginnings than the widest possible distribution of a phenomenon.

When Kuba wrote about the possibility of the Balkan dissonant style of singing being very old, scholars thought in terms of centuries, and possibly millennia (Kuba 1909). Victor Grauer famously declared that the Bushmen/Pygmy style of polyphony could be a survival of the earliest singing style of humanity, stretching back for the last 100 000 years (Grauer 2006, 2007). In his reconstructions Grauer relies on the 'Recent African' model (known also as the 'Total Replacement' hypothesis). My research and polyphonic data support the 'Multiregional model', also known as the 'Network model', where the count for the age of humanity starts at least two million years ago (Wolpoff 1999).

If we believe that such a long survival of a singing style is simply impossible, then we face the even more difficult task of explaining the presence of amazingly similar and very specific dissonant singing traditions in very specific intervals in such wildly different and geographically isolated parts of the world. I suggest that we should not discount the simple and elegant possibility that these dissonant–based loud singing traditions are all remnants of the oldest human singing style, the style that helped our ancestors get into the battle trance and obtain collective identity in order to fight together, as a unit, for their common survival.

It is widely known that many cultural inventions that make our life safer, more convenient and more meaningful, were initially invented for reasons of national security and military capability. The four–wheel drive, the microwave, GPS and computers are among such primarily military inventions. I am proposing that human choral polyphony has similar origins. It was designed not by a human inventor, but by the genius of natural selection through the battle

for survival. Music most likely became the sphere of culture much later, after it lost its initial leading role in human communication to human speech and human life became much safer. We will discuss this important issue in the next section of the article.

Proto–Polyphony and the Origins of Speech

We have logically arrived at the point where we need to discuss the forces that brought the initial universal distribution of vocal polyphony to the mosaic distribution of polyphony that we observe today. This is a crucial question for the presented model: if we accept that all human populations took with them from Africa similar singing traditions, based on polyphony, then why is polyphony distributed only in some regions of the world?

Here, before discussing the main argument, I must note that musical materials support the historical picture presented by the multiregional hypothesis of human evolution (see Wolpoff 1999). I agree with the proponent of this hypothesis that archaic *Homo sapiens* had all the necessary cognitive abilities that are present in modern *Homo sapiens*. In explaining their archaic facial details I proposed that the only feature that differentiated archaic *Homo sapiens* from anatomically modern *Homo sapiens* was articulated speech.

It is important to remember that, by the time of the dispersal of humans from Africa (about 1.8 million years ago), human intelligence and language was present, although the language was not based on an articulated medium, but most likely on pitch–based communication. The difference between **language** (the cognitive ability to create and manipulate ideas) and **speech** (one of the mediums of language) is crucially important in linguistics. Language existed much earlier than speech (see, for example, the review by Hewes, 1977. See also Krantz 1980, 1994). Grover Krantz famously proposed that the change of archaic facial features into contemporary facial features was connected to the acquisition of articulated speech (Krantz 1980, 1994).

Let us now return to the story of the initial dissonant polyphony that was taken from the common African cradle. What happened after this? I proposed that various human populations, who reached their places of habitat without articulated speech, **shifted to articulated speech in different epochs**. What is the logic behind such an unusual proposal?

After the advent of articulated speech, musical (pitch based) language lost its initial survival value. Articulated speech gradually became the main communication medium in human societies. Musical

communication and the group singing tradition were marginalized and gradually started to disappear. The key point of my proposal is that **the shift to articulated speech happened in very different epochs, some earlier and some later**. If we assume that various groups of peoples reached their areas of habitation without speech, it is most likely that the shift to speech would happen at different times. From this point onwards the logic is quite straightforward: in the regions where the shift to speech happened earlier, the primordial tradition of vocal polyphony must have already disappeared. On the other hand, in the regions where the shift to articulated speech happened later, the slow and gradual process of decline of the polyphonic traditions must still be ongoing.

As a result of this asynchronous decline of ancient singing traditions, in some regions the tradition of vocal polyphony is completely lost (in East Asia, Australia, and among most of the Native Americans). East Asia is arguably the most monophonic region of the world today. According to my proposal, it must have been among the ancestors of East Asian populations that the shift to speech occurred first. The second most monophonic region of the world is probably Australia, so I proposed that the ancestors of the native Australians were the next to shift to articulated speech.

On the other hand, polyphony is still strongly present in European and particularly in sub–Saharan African populations. Therefore I proposed that, after East Asians and Australian aboriginal populations, European and finally African populations also shifted to articulated speech.

I cannot go into detail on the wide range of supportive evidence for this idea (see Jordania 2006: 347–375), but I will briefly mention several fields that support the idea of the asynchronous shift to articulated speech:

Paleoanthropology. Contemporary human facial details were most likely formed by the emergence of speech (Krantz 1980, 1994). Most importantly for us, facial details in the contemporary populations appeared in various regions at different times: the earliest shift happened in East Asia, and the latest in sub–Saharan African populations. The differences in time range are huge, from about 350 000 years for East Asian, to about 11 000 years for sub–Saharan populations (Wolpoff 1999).

Epidemiology of stuttering. Stuttering is a genetic disorder, connected to the late acquisition of speech in human evolutionary history[11]. Despite the belief of most speech pathologists that the

[11] The onset of stuttering was linked to our evolutionary past almost a century ago. According to Robert West, "human speech is a function overlaid on ancient systems for eating and respiration [and I would add "and singing" JJ], and because

epidemiology of stuttering is the same everywhere in the world (Bloodstain 1995), certain publications indicate that there are in fact big differences between different regions. Stuttering is much more prevalent in sub–Saharan African populations, and extremely rare among East Asian and Native American populations (Bloodstein 1995: 136; Cooper & Cooper 1993: 194–196; Finn & Cordes 1997: 222. See also Reece & Jordania 2001).

Epidemiology of dyslexia. Like stuttering, the epidemiology of dyslexia shows an increased prevalence of the condition among sub–Saharan African populations and extreme rarity in East Asian populations (Makita 1968; Spaeth 2003; see also Jordania 2006: 373–375; 2015: 476–480).

Acquisition of phonology in children. According to the available information, there is a significant difference in the age of acquisition of the phonologic system between European and East Asian populations. Children in East Asia acquire the same system much earlier (from the age of 1 to 3 years) than children of European descent (from the age of 2.5 to 6 years) (Menyuk 1968: 140–141; Nakazima 1962; So and Dodd 1995; see also Jordania 2006: 374–376).

Therefore, (1) scholars should not exclude the possibility that speech origins might have different timelines in various regions of the world, and (2) different populations might have differences in genetic predilection towards stuttering and dyslexia. For research on the origins of polyphony this line of research is important as it offers a solid explanation for the uneven distribution of polyphony around the world.

Very Brief Conclusions

We are approaching the end of our discussion of the new model of the origins of polyphony. Probably the most important conclusion of the research is obvious: such big problems as the origins of polyphony are impossible to investigate within musicology and ethnomusicology without wide cross–disciplinary and multidisciplinary approaches. It is to be hoped that works based on comparative methodology will begin to make more than occasional appearances on the pages of mainstream publications.[12]

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speech is one of the latest abilities we acquired, it is one of the most readily lost or impaired" (see Bloodstein 1993: 179). This idea is widely shared by speech pathologists.

[12] An interesting fact: research on polyphony seems to be of interest primarily to European ethnomusicologists. Out of 25 special conferences dedicated to the research of polyphony from the 1970s onwards, none were held in the USA, one was organised in Asia, and 24 in Europe.

In regards to the origins of polyphony, ethnomusicologists have to admit that the existing facts do not support the old idea of choral singing being a late cultural invention. The facts suggest that polyphony is gradually disappearing all over the world. It is becoming increasingly clear that the origins of human choral singing are intimately connected to the various aspects of our historical past, and should be studied in the broadest context of human evolutionary history.

The previous conclusion provides us with a potentially very important methodological tool: if we accept the idea that after the appearance of articulated speech, polyphony – and, more generally, human musical traditions – lost their initial survival importance and started to decline, then our general view on the development of human musical history will be greatly affected[13].

And finally, if we are ready to accept the previous two fundamental propositions, then research on the origins of polyphony has a rich potential to make serious contributions to the wider circle of issues of human evolution.

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[13] New evidence that has appeared during the last few decades also suggests that our musical abilities are of extremely ancient origins and that humanity might he gradually losing its musicality. If we take into account such facts as (1) every normal new-born human baby has perfect pitch, which then gradually disappears during the child's "verbalization" (Saffran 2003; Saffran & Griepentrog 2001), or that (2) musical faculties are placed in the most archaic part of our brain, the so-called "reptilian brain" (Peretz 2003), then we might grasp the new reality of the age and the origins of our musical abilities. Are ethnomusicologists ready to see the field of music, traditionally dominated by the theories of music as a gradually developing cultural invention, in this new light?

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Џозеф Џорданија

НОВИ ИНТЕРДИСЦИПЛИНАРНИ ПРИСТУП У ИСТРАЖИВАЊУ ПОРЕКЛА ТРАДИЦИОНАЛНЕ ПОЛИФОНИЈЕ

(Резиме)

У чланку је дат предлог новог модела порекла вокалне полифоније у ширем контексту ране људске еволуције. У уводу се разматра веза између променљивих методологија у етномузикологији и променљивих погледа на порекло полифоније. Указано је да образац дистрибуције вишегласја у географски и еколошки најизолованијим регијама света (као што су планински венци, острва, велики шумски региони и континентални рубови), сугерише могућност да полифонија није познији културни изум. Напротив, она мора бити веома древни феномен, који у најизолованијим крајевима света и даље преживљава. Биће наглашена потреба за упоредним, укрштајнодисциплинарним и мултидисциплинарним студијама у истраживањима порекла вишегласја. У потрази за пореклом хорског певања човечанства аутор предлаже осврт на најраније фазе историје еволуције људског рода. Супротно претпоставци Чарлса Дарвина (Charles Darwin), који је мислио да су се први људи развијали у окружењу без предатора, овде је показано да је интеракција с предаторима била кључни фактор који је обликовао људску морфологију и понашање. Сугерисано је да је групно певање и играње, заједно с цртањем по телу и маскама, коришћено у служби (1) одвраћања предатора и (2) стављања

хоминида у измењено стање свести, „борбени транс”. У овом стању, неуролошке активности учесника се радикално мењају, они задобијају заједнички, колективни идентитет, не осећају страх или бол и спремни су да жртвују своје животе за заједнички циљ. У чланку се потом дискутује о употреби музичких ритуала с ритмичком основом као снажних средстава за индуковање стања борбеног транса у савременом друштву, посебно у сферама као што су религијска и војна. У овом стању ума, људи губе уобичајени „здрав” разум и логичко расуђивање, укључујући и инстинкт за преживљавање. Резултат тога јесте да људи у овом стању могу даураде и екстремно алтруистичке и екстремно насилне ствари. У последњем делу чланка у први план је стављена хипотеза асинхроног настанка говора у различитим популацијама како би се објаснила тренутна мозаична распрострањеност вишегласја међу културама света. Подршка идеји асинхроне промене у артикулисани говор црпи се из више научних поља, од палеоантрополошких доказа и епидемиолошкох студија о муцању и дислексији у различитим културама, до фонолошких студија о обрасцима аквизиције међу децом у различитим регијама.

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