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Origins of Choral Singing in the Context of Human Evolution

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Tokyo, Japan 2010 May 27

(At the beginning – I will say a few words of greeting in Japanese).

I come from a family of ethnomusicologists. My father, Mindia Jordania, was one of the leading ethnomusicologists of Georgia. My brother and his wife are also ethnomusicologists. My wife, Nino Tsitsishvili, is an ethnomusicologist with a PhD and plenty of publications, including a book. So receiving Fumio Koizumi Prize for me is a not only the acknowledgment of my contribution to ethnomusicology, but acknowledgment of the contribution of my whole family. Apart from my family, I also want to express my deepest gratitude to my ethnomusicology professor, late Grigol Chkhikvadze, and my elder colleague, Prof. Izaly Zemtsovsky from Stanford University, whom I consider my teacher and mentor.

Today, when political and economic unity of the world is gradually becoming a reality, nations are finding that elements of their traditional culture are the strongest symbols for their identity. Traditional vocal polyphony for Georgians has been one of the central elements of their cultural identity for centuries. I want you to hear three short examples of Georgian polyphony. These examples come from different regions of Georgia, and the styles of polyphony in these regions are also different. Let us kook at the map of Georgia:

[Showing ethnographic Map of Georgia]

The first example is a round-dance from North-West Georgia, the most mountainous region called Svaneti. Svanetian polyphony is characterized by three part polyphony, where singers pronounce the verbal text together and the voices create powerful dissonant chords.

[Playing MUS EX. 1: Svanetian round dance]

The second example is a table song from Eastern Georgia, Kakheti. This region is famous for its wine-making traditions. In this style two soloists sing rhythmically free melismatic melodies on a background of a pedal drone.

[Playing MUS EX. 2: Kakhetian table song]

The third example comes from West Georgia, region called Guria. Guria is famous for its contrapuntal polyphony and the specific technique of yodel, which is called here "Krimanchuli". This is a very old recording.

[Playing MUS EX. 3: Gurian song with yodel]

Tomorrow I will have a 90 minute lecture on Georgian polyphony at Tokyo Music Academy. I will have plenty of time to speak about different aspects of Georgian polyphony, but today I have only 30 minutes for the results of entire my study on the origins of traditional polyphony, so I will not be talking today about the scales, chords, cadences, contrapuntal techniques and other specific elements of Georgian polyphony.

Now let me discuss the results of my study on the origins of polyphony in the context of human evolution. I became interested in polyphonic traditions of other cultures in the 1980s. At that time traveling outside of the Soviet Union was impossible, letters written to overseas colleagues were opened by KGB, and the literature at the national libraries of Soviet Union was very poor on international publications. In the 1980s we organized three International conferences on traditional polyphony in Georgia. Meeting colleagues from different cultures was a great help for me to gain knowledge about different polyphonic traditions. In 1989 I published my first book on the origins of polyphony. After 1995, when I moved to Australia, collecting materials on different cultures became much easier. After about 25 years of collecting information about the distribution of traditional polyphony, I compiled a map of world polyphony. This map will be published in a book "Choral Singing in Human Culture and Evolution."

[Map of the world polyphony]

On this map you can see the regions with polyphonic traditions, and also some details of what types of polyphony are distributed in different regions of the world. The most polyphonic regions are sub-Saharan Africa, Europe, and Oceania. East and North Asia, most of Americas, and Australia are mostly monophonic. I cannot talk in detail about the distribution of polyphony in the world, but you can see how complex it is.

According to the existing model of musicologists and ethnomusicologists, polyphony was developed from the monophonic singing. This idea has some fundamental contradictions. For example, we know that some civilizations, which have very ancient roots and elaborate traditions of professional music, like Chinese or Ancient Greek, did not have polyphony, but on the other hand, Pygmies, living in Central African jungles, and the tribes of Central Papua New Guinea have complex forms of polyphony. In my research I gradually came to the conclusion that the existing theory of the origins of polyphony from monophony is not correct. Studying historical sources, I paid attention, that there are many cases of disappearance of polyphonic traditions from every part of the world, but I could not find a single case of the appearance of a new polyphonic tradition in a monophonic culture. So, I gradually came to the conclusion, that polyphony is a very archaic phenomenon, and it is gradually disappearing all over the world. That's how I started researching the problem of the origins of choral singing in the context of early human evolution.

First I collected information about the phenomenon of singing in different animal species, and tried to find out if there is anything specific about human singing behavior. More than 5400 different species of animals can sing. These are mostly birds, but there are also primates, whales, dolphins and seals. I paid attention to the fact, that most of the singing species live high up on the trees, and a few singing species also live in the water, but there are no species, who live on the ground and sing. The only species that live on the ground and can sing, is us, humans. I suggested that this fact is connected to different natural environments.

Singing is a very dangerous activity, as predators can hear singing and locate their pray very easily. Those who live up in the trees, feel more safe to sing, because on the trees every animal species live according to their body weight. For example, 50 kilo leopard can hear singing of 15 kilo monkey, but leopard cannot reach monkey who is singing from higher, thinner branches. So in the trees there are several "floors," and different animal species live on "different floors" according to their weight – heavier animals live on lower branches, and lighter animals live on higher branches.

The situation among the ground living animals is very different. Everyone, from 1 kilo rabbit, 50 kilo leopard, 150 kilo lion and 4 ton elephant all live on the same "ground floor". So, if you live on the ground, and you start singing, you are putting yourself in a grave danger. I suggested that safety was the main reason why animals who live on the ground do not sing. That's why almost all the sounds that we hear when we are in the forest, come from the trees, from different birds, not from the ground animals. As human distant ancestors lived in the trees, it is natural to suppose that when humans became terrestrial, they were already singing.

The most important question is to find out WHY human ancestors did not stop singing after they descended to the dangerous ground, why they are not as silent in their everyday life, as, for example, are chimpanzees. Studying this problem, I came to the conclusion that for humans singing became an important element of **defence from predators**.

I suggested that loud rhythmic group singing among humans had two very important functions for the defence from the predators: (1) INTERNAL function, and (2) EXTERNAL function.

Internal function of loud rhythmic group singing was to transform human psychology, to put them into a trance-like state, state when they do not feel fear and pain. In this state humans lose themselves, lose their individuality, and become a part of a group. In this state they follow group interests and can even sacrifice themselves for the common goal. Humans were going into this state when they were facing a mortal danger. I call this state "battle trance". Battle trance was transforming individual humans into the group of dedicated warriors, who put the interests of the group much higher than their individual interests. Many armies employed and still employ war cries and playing and listening to loud rhythmic music before going into the battle. Even in the 21st century, listening to rhythmic music is widely practiced among contemporary combat troops (for example in Iraq War). American soldiers in Iraq confess that hearing loud rhythmic music prepares them psychologically for the combat. Singing together is good not only for those who are going to fight enemy and risk their lives. Singing together greatly enhances trust between the members of any group. The tradition of Japanese corporations of having their corporation songs, and everyone singing them serves the same function. I believe this tradition has very deep psychological roots. So, the INTERNAL function of group singing was to put humans into a special trance-like state, to unite them into a group, to put common interests above the individual interest, and even above the survival instincts.

External function of the loud rhythmic singing was to **intimidate predators**. Many animal species make sounds to scare away predators and competitors. It is also a well known fact, that the unarmed group of loudly shouting humans can chase away a hungry men-eating tiger or lion from their kill. Apart from defence from the predators, our ancestors were using loud rhythmic singing to **obtain food**. Together they could chase away predators and take over their kill. This model is consistent with the involvement of the most ancient brain circuits of the human brain in music making, brain circuits which are only used in critical for survival situations. In order to achieve a battle trance and to intimidate predators, I suggested that apart from loud rhythmic singing, our ancestors also used rhythmic body movements and body painting. Both rhythmic movements and body painting also had the INTERNAL and EXTERNAL functions, discussed above. They were also helping humans to achieve transformation of their mental state in order to get into a "battle trance". As this system of defense was based on audio and visual elements, I named it "Audio-Visual Intimidating Display" (AVID).

In my 2006 book I also suggested that the origins of choral singing is closely connected to the origins of human language and intelligence. I suggested that the central cognitive difference between human and animal mental abilities is the **ability to ask questions**. Although apes in laboratories demonstrated the ability to comprehend some elements of human language, and managed to correctly answer human questions, they failed to ask any questions themselves. It is important, that asking questions does not need syntax, and the first questions are asked by children with the use of question INTONATION only. Antiphonal singing, which is based on the dialogical form of communication, is the most widespread form of human group singing, and I suggested that antiphonal singing could gave the birth to the human ability to ask questions. Here we need to answer very important question: If all human groups had polyphonic singing when they migrated out from Africa, why some regions of the world are today mostly polyphonic, and other regions are mostly monophonic?

I suggested that the answer to this question can be found in the evolution of ARTICULATED SPEECH. Most scholars agree, that language and speech are very different phenomena. Language can be communicated without speech (for example, with a sign language, or Morse code). Speech, as the most efficient form of communication, came later. I suggested that the decline of the ancient traditions of polyphonic singing started after the appearance of articulated speech. I proposed, that if the initial human populations came out of Africa still without articulated speech, there is a big possibility that different human populations in different regions shifted to articulated speech in different epochs, some earlier, and some – later. If this is correct, then in the regions where the shift to articulated speech happened earlier, traditions of polyphonic singing must be more lost. Speech is also believed to be the main reason for the appearance of modern features of human face anatomy, and it is very important, that different regions of the world also show very different regional continuity of contemporary populations with the fossil evidence from the same region. East Asia (particularly China) shows the deepest regional continuity of contemporary humans with their fossil ancestors. This continuity goes back to over 300 000 years. The next is the case of Australian aborigines, followed by European populations and finally, by sub-Saharan African populations. The time differences of the regional continuity are huge – from over 300 000 years for East Asian populations, about 40 000 years for European populations, and about 11 000 years for Sub-Saharan African populations. If the articulated speech was developed earliest in East Asia, and speech took over the function of communication here for over 300 000 years ago, this can explain the absence of polyphonic singing in East Asia. On the other hand, in Europe, and particularly in sub-Saharan Africa, if speech replaced musical communication much later, this can explain the presence of the rich traditions of polyphonic singing.

This new suggestion leads to several very unusual propositions, connected to the different forms of speech and reading pathologies, like

stuttering and dyslexia. It is accepted by most scholar that stuttering and dyslexia are connected to the late appearance of speech and reading in human evolution. I predicted that if East Asian populations shifted to articulated speech earlier, there must be less stuttering and less dyslexia among the populations of East Asia, and also among Australian and American aboriginal populations. On the other hand, stuttering and dyslexia should be higher among European, and particularly, among sub-Saharan populations. Although majority of the speech pathologists believe that all human populations must have the same stuttering prevalence, there are several important studies which show that stuttering rates are very different in different populations. 1% is the stuttering prevalence for most of European populations. Unusually high numbers of stutterers are found in some west African populations (reaching 5, 6, and even 9.2%), and extremely low number of stutterers were found in some populations of American Indians and Australian Aborigines. Stuttering is quite usual among Japanese, but I was particularly interested in the problem of stuttering among Chinese, because Japanese population has some Ainu substratum, which is believed to be of very different (possibly Caucasian) origin. The information on the stuttering prevalence among Chinese was totally absent, so I did a pilot research, together with Prof. Sheree Reese, an American Speech pathologist from the Kean University.

Our research with the help of 32 speech pathologists from Singapore indicated that stuttering is extremely low among the Chinese population in Singapore. This preliminary research suggests that genetic factor may be playing an important role in the differences of stuttering prevalence in different populations. Here is the preliminary map of the distribution of stuttering prevalence in different regions of the world. I put question marks where the data needs to be confirmed.

[Map of stuttering]

Another very interesting case is the case of dyslexia, or reading difficulty. I suggested that different timelines of the shift to articulated speech could result in more frequent cases of dyslexia in Europe and particularly sub-Saharan Africa. On the other hand, I expect that there must lower prevalence of dyslexia among East Asian, Australian Aboriginal, and American Indian populations. Data about the dyslexia prevalence is not available from many regions of the world, but it is interesting, that some scholars in Japan and China propose that dyslexia is much lower among Japanese and Chinese children. Most (but not all) dyslexia experts suggest that the differences in dyslexia prevalence are connected to the differences in writing systems, but I think different populations can also have genetic predilection towards dyslexia. One more interesting factor is the acquisition of phonological system in children from different cultures. If populations of East Asia shifted to articulated speech much earlier, children from these populations might be developing phonological system earlier than children from the polyphonic regions of the world. Here are

the graphic schemes of the development of phonological system in Japanese and American children (according to the works of Nakazima, and Menyuk):

[Japanese and USA children acquisition of phonological systems - picture]

As you can see, Japanese children are already finishing the acquisition of phonological system when American children are just starting this process.

It is time to conclude, so I want to apologize for such a brief review of so many ideas. I hope I made clear that for me the origins of polyphonic singing is not connected to the late development of musical culture. For me the origins of vocal polyphony is closely connected to a wide range of problems of early human evolution. I am very happy that some of the leading scholars in the sphere of the origins of music, like Simha Arom from France, expert of the African polyphony, and Steven Brown from Canada, the editor of the collection "Origins of Music," gave very high praise to my model of the origins of choral singing in the context of human evolution. I am also very happy that study of traditional polyphony is becoming one of the leading topics in ethnomusicology. Later this year there will be two international conferences dedicated to traditional polyphony. I am sure that human choral singing, the legacy of our evolutionary history and the testament of human social nature, will continue to play an important role in connecting people to each other.