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**“INTERROGO ERGO COGITO” – “I AM ASKING QUESTIONS,  
THEREFORE I THINK”: RESPONSORIAL SINGING  
AND THE ORIGINS OF HUMAN INTELLIGENCE**

In a number of my earlier publications I repeatedly indicated that the search for the origins of the phenomenon of human polyphonic singing is intimately connected to the evolution of human language, speech, and intelligence (see some of the publications on this topic: Jordania, 1988, 1988a, 1989, 1997, 2000, 2001, 2002, 2003). This time I am not going to talk about the origins of human speech (which, according to my model, is responsible for the enigmatic distribution of the tradition of polyphonic singing over the continents). Therefore, I am not going to discuss the correlation of geographic distribution of traditional polyphony and the distribution of the data of physical anthropology (Jordania, 1988a, 1989, 2002). The same way I am going to ignore this time the problem of distribution of speech pathologies and the peculiarities of acquisition of phonologic system in different populations and their correlation with the distribution of tradition of polyphonic singing (Jordania, 2000, 2002).

This paper is dedicated to one of the most important points of the evolution of human intelligence. My aim is to argue that the shift from the pre-human to human intelligence took place in the pre-articulated communication epoch, in the context of the musical communication, or more precisely – in the context of the earliest forms of human group singing. I will try to argue, that the origins of responsorial singing was directly responsible for the human “communication revolution” - phenomenon of asking questions. **In its turn, the appearance of the ability of asking questions was the “cognitive revolution”**, maybe the most important defining moment of development of human intelligence, setting apart the evolution of pre-human and human intelligence.

First of all I want to stress that polyphonic singing has two factors, and in order to understand this phenomenon we must take into account the importance of both of them. These two factors are:

SOCIAL factor (polyphony is a group singing, social activity through singing) and MUSICAL factor (polyphony is a simultaneous sounding of more than one pitch).

**According to the long standing scholarly tradition of dealing with the phenomenon of polyphony, only musical factor is taken into account in musicological and ethnomusicological publications.** Social factor is almost always left out of the attention. The aim of my paper is not to fully revolutionise the understanding of the term polyphony, but to stress that in order to understand the origins and the contemporary functioning of vocal polyphony it is imperative to take into account the social factor of the phenomenon of polyphony.

It is not difficult to see that these two factors (or criterions – social and musical) do not necessarily coincide. For example, according to the SOCIAL factor, group unison singing is polyphony, as we have a **social/musical** interaction of the big group of people (such as participating in rituals, during social gatherings, supportive singing at the sporting events, or singing National anthems). From the point of view of MUSICAL factor this kind of group singing (**when the participants sing in unison and octaves only**), is not much different of a soloist singing a melody. That's why the musical traditions where there is a tradition of group singing (but there is no polyphony of pitches) are in a group of “monophonic”

cultures. According to the musical factor, group unison singing can only become a subject of polyphonic study if there are some obvious differences in the melodic variants performed by members of a group. Resulting unison-heterophonic texture is often considered to be the bordering phenomenon between monophony and polyphony.

On the other side, it is also possible to have a musical phenomenon where we have polyphony from the musical point of view, but there is no polyphony from the social point of view. Unique tradition of overtone singing (sometimes quite awkwardly called “throat singing”), where one person produces more than one pitch, is the obvious example for this. According to the MUSICAL factor, overtone singing is polyphony, as we can hear two functionally distinct pitches during the performance. If we look at the phenomenon of the overtone singing from the point of view of the SOCIAL factor it is easy to see that overtone singing does not qualify as a social polyphony, as the performer usually is alone and there is no social-musical interaction (or co-intoning) during singing. To qualify as a social polyphony there must be more than one singer involved in a performance of overtone singing.

It is obvious that there are big numbers of musical traditions where polyphony is present from the point of view of both – SOCIAL and MUSICAL factors (as this is in Georgia, or in many regions of the Europe, in sub-Saharan Africa, in Polynesia, etc). At the same time we should remember that for amazingly large group of cultures polyphony is present only according to one factor only (social or musical). Thus when I use the term “polyphony” I mean *cultures where this phenomenon is present both from the SOCIAL and MUSICAL points of view*. In all other cases I will be using terms “social polyphony” or “musical polyphony”.

Now let us have a look at the map of the World and discuss the results of our approach, if we study the distribution of the phenomenon of polyphonic singing according to the

**SOCIAL factor,  
MUSICAL factor, and  
COMBINED SOCIAL-MUSICAL factors.**

(1) The map of polyphony according to the SOCIAL factor alone represents an interesting case. When I started collecting information on the group singing from so called “monophonic cultures”, **I was overwhelmed by the facts of group singing ubiquity even in the most monophonic** traditions of the world (including the large regions of East Asia and indigenous populations of North and South America). Without going into details of the distribution of SOCIAL polyphony I should say, that apparently, there is hardly a culture in the world without the tradition of group singing. (For the quick reference I would direct the interested reader to the magnificent 10 volume “Garland Encyclopaedia of the World Music”, published in 2000).

(2) The map of polyphony according to the MUSICAL factor only is understandably also wider than the map according to the combined social-musical factors, although the difference is much smaller in scale than in case of the SOCIAL factor. In fact MUSICAL factor map is mostly coinciding with the map of polyphonic cultures, traditionally accepted in musicology and ethnomusicology (see Schneider, 1969, Jordania, 1989). This would seem hardly surprising if we remember that the MUSICAL factor has been in fact the only factor for musicologists and ethnomusicologists in determining the presence of polyphony in a culture.

(3) The COMBINED map (combining both SOCIAL and MUSICAL factors) is quite close to the map of polyphony according to the MUSICAL factor only. “MUSICAL factor”

map is a bit wider as it contains regions where we have a solo polyphony (overtone singing) tradition. As I have already mentioned, under the term “polyphony” I will be meaning the singing traditions where both SOCIAL and MUSICAL factors of polyphony are present. To qualify as a polyphonic tradition, both SOCIAL and MUSICAL factors should be present together, at the **SAME TIME in the SAME GENRES**.

Review of the distribution of the polyphonic singing according to the SOCIAL and MUSICAL factors brings us to the following conclusions:

- Map of polyphony according to the COMBINED SOCIAL & MUSICAL factors covers the smallest area of the world (still about the half of the world cultures);

- Map of polyphony according to the MUSICAL factor only covers mostly the area of the Map of polyphony according to the **COMBINED SOCIAL & MUSICAL factors, although it is still wider than the later (due to the presence of the tradition of overtone singing in Central Asia)**;

- Map of polyphony according to the SOCIAL factor only actually comprises all the musical cultures of the world.

- And inevitable - **groups singing (social polyphony)** seems to be one of the true universalis of human vocal activity.

Study of the phenomenon of the social polyphony (group singing) brought to my attention the fact that one of the forms of group singing is another true universal of human vocal communication. This form is a responsorial singing, based on the call & response between the leader and the group. Not only in sub-Saharan Africa, Polynesia, Europe or other polyphonic regions, but is every musical culture (including monophonic ones) there seems to be important instances of responsorial singing. Of course, in polyphonic cultures the response is usually polyphonic, and in so-called monophonic cultures the response of the group comes mostly in unison (or octaves). This by no means affect the fact of global distribution of responsorial singing all over the musical cultures.

Existence of a strong human communication universal indicated that this form of human communication (responsorial singing, or question-and-answer singing) was present at the earliest stages of evolution of human populations, **at the stage when the geographical and consequently racial differentiation** was not in place yet.

Before I start discussing the evolutionary importance of the responsorial singing for human communication, I would like to discuss the origins of the phenomenon of overtone singing. As I have already mentioned, as a phenomenon overtone singing **MUSICALLY** belongs to the polyphonic cultures (we have more that one pitch simultaneously) but **SOCIALLY** it is **not polyphony** (there is no musical-social interaction of a group of people).

Although musicologists and ethnomusicologists try to avoid discussing chronological beginnings of any musical phenomenon, it is a common belief that overtone singing is one of the most ancient musical phenomenon, kind of a relict of human vocal production (see Tongeren, 2004). This belief is mostly based on the audio impression of this style of singing. I agree that speculations about the chronological depths **will never give us a satisfactory** answer to the question, but if we still try to reach the chronological depths of any phenomenon, we need to remember that audio impressions can be misleading. All the available information about the carriers of the tradition under discussion should be brought to the scholarly scrutiny. What's the contemporary stratification of distribution of this phenomenon? What historical and ethnic processes took place in this region, involving the populations that possess this phenomenon? Do we have any historical sources about this phenomenon? Let us try to answer these questions regarding overtone singing.

GEORGAPHIC distribution. More ancient traits tend to be in the periphery and isolated

“pockets” of the geographic area. More continuous distribution usually points to a relatively late distribution of the phenomenon. Overtone singing today exists in Central Asia – Tuva (particularly – west Tuva), Mongolia (also west Mongolia), and some adjacent territories of Altai-Saian mountains. **This is quite a big, although a compact area**, without traces of the survival of ancient trait in different isolated regions.

**HISTORICAL AND ETHNIC processes.** Central Asia was a crossroad of the active historical, ethnic and racial processes. Most importantly for our subject, more and more archaeologists and physical anthropologists agree that this territory was populated mostly by Europeoid populations until the 9th century AD (this is also confirmed by Chinese historical writings of the corresponding period and earlier). Active migrational processes from the East Asia starting in 9th century changed the ethnic (and presumably cultural) profile of this region, replacing older Europeoid populations with East Asian populations. Ethnic change, though, as this often happens, was not complete, and the traces of the earlier Europeoid population are evident in the physical type of the contemporary populations of this region. Specifically, the old Europeoid substrat is most evident in the living populations of the following areas: in west Tuva, in west Mongolia, and in the adjacent territories of Altai-Saian mountain ranges. Coincidence of the regions of distribution of overtone singing and the regions of survival of the old Europeoid ethnic substrat indicates that the active migration processes in Central Asia from the 9th century must be somehow connected to the origins and distribution of the phenomenon of overtone singing.

**HISTORICAL sources.** The main problem with historical sources is that for most of the regions of the world they do not go far enough to provide information about distant historical processes. Fortunately for our subject, neighbouring China with its unique historical records reaching few thousand years is a lucky exception. **Chinese written sources provide information** not only about Chinese but about the neighbouring territories and peoples as well, including Central Asia. The most interesting for our discussion is that according to the Chinese sources from the same 9th century, peoples populating the neighbouring Central Asian regions were using (as a was cry) a specific sounds consisting of a combination of low growling sound and a high whistling sounds. This description fits the phenomenon of overtone singing quite well.

Of course, it would be controversial in discussing the chronological depths of the phenomenon to rely solely on the fact of geographic distribution, or the historical and ethnic processes, or solely on the written sources, **but if all these independent sources** point to one direction, the accuracy of reconstruction of the historical processes is much higher. In the case of overtone singing, the geographic distribution of this phenomenon (covering relatively compound territory, indicating later distribution), historical and ethnic processes (replacement of the earlier Europeoid population by East Asian populations from the 9th century, and survival of the old Europeoid substrat in the regions of distribution of overtone singing tradition), and the historical sources (describing the unique sound of overtone singing, although performed together by fighting armies from the same 9th century) all point to one direction. Thus, all these data give us grounds to suppose that the phenomenon of overtone singing might come to existence as a result of the mixture of two different populations and cultures – older Europeoid (supposedly polyphonic) and later East Asian (supposedly monophonic) in the 9th century. (Interestingly, this date is very close to the date of the origins of European professional polyphony)

**Therefore, we have on one side a phenomenon of SOCAL polyphony, which is distributed all over the world, representing one of the strongest universals of human communication**, and on the other side we have a phenomenon of MUSICAL polyphony

only - overtone singing (solo polyphony), which is distributed in a **relatively restricted area and possibly has its origins** approximately from the end of the first millennia AD.

Extremely wide distribution of SOCIAL polyphony indicates that SOCIAL POLYPHONY (and particularly – responsorial singing) must have had a particular importance in the evolution of human polyphonic singing.

According to my model, **the origin of RESPONSORIAL** singing was a moment of a crucial importance in the history of not only a human polyphony, but human intelligence as well. The appearance of responsorial forms of singing in pre-human societies must have **triggered (or was triggered by?)** the appearance of the uniquely human ability of asking questions. **I propose that human communication, heavily based** on asking questions and answering them, has been born together with the responsorial form of singing. I am not going to discuss in detail this crucial point in human evolution (on the revolutionary importance of the phenomenon of asking questions for the evolution of human intelligence reader can read my paper published in the materials of the 2002 Polyphonic Symposium, **and also in Jordania 2000, 2003**).

Several important points to summarise this paper would be as follows:

- SOCIAL polyphony (singing in groups) was one of the earliest and the most important forms of musical-communicative activity in pre-human **(and later in human)** societies;

- The most widely distributed and evidently the earliest form of social polyphony (both in so-called monophonic and polyphonic cultures) was responsorial singing;

- Emergence of responsorial singing in human evolution was intimately connected to the emergence of uniquely human ability to ask questions. Interestingly, specially trained apes demonstrated that apes can successfully learn how to communicate with humans by answering their questions (**including recognition of question words**), although **apes did not succeed to "cross the threshold" and to learn how to ask questions themselves**;

- The way human languages forms questions is one of the strongest universals of the world languages (**Chomsky, 1957**), and even more universal and evolutionary earlier seems to be forming questions using the question intonation only (even before the syntactic stage of development). Babies of all races and nations use the intonation of question to ask their first questions on a pre-articulated stage of development (**Cruttenden, 1986**);

- The most important evolutionary changes in human communication (emergence of dialogical form of communication based on questions and answering questions) and human cognitive abilities (recognising other humans as a source for new information and a source for solving problems) took place within the initial musical-communicative epoch, before the advance of articulated speech.

**Perephrasing the famous saying "Cogito ergo Sum" ("I think, therefore I exist") into "Interrogo ergo Cogito" ("I ask questions, therefore I think")** I wanted to acknowledge the crucial importance of the ability of asking questions in the evolution of human intelligence. According to my model, this "evolutionary revolution" in human cognition and language was intimately connected to the initial stages of the development of human choral singing. Intrinsic unity of human thinking, human communication and human singing **ability** strongly suggests that the problem of the evolutionary roots of human intelligence, language and group singing **is actually one intertwined set of problems and the research in these spheres should not be undertaken separately, without wide interdisciplinary implications**.

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