

### **Comment on the new look on the evolution of human morphology, behavior and art“**

Joseph Jordania's interesting and scholarly article examines the contrast between sexual selection and natural selection in explaining the evolution of a host of human traits, spanning from physical features like long hair to group behaviors like dancing. He argues that, while several of these traits have been recently attributed to sexual selection (by Geoffrey Miller and other theorists), they should be more properly thought of in terms of natural selection vis-a-vis predator defense mechanisms. In making this proposal, Jordania groups together a large variety of traits, from those that can reasonably be attributed to natural selection mechanisms (large body size, bipedalism) to those that cannot easily be (such as music and the other arts). Charles Darwin, the inventor of natural selection theory, was the first person to question the individual-level survival benefits of music. In a famous passage from his book *The Descent of Man, and Selection in Relation to Sex*, he wrote: „As neither the enjoyment nor the capacity of producing musical notes are faculties of the least direct use to man in reference to his ordinary habits of life, they must be ranked amongst the most mysterious with which he is endowed“ (Darwin, 1871). Hence, Jordania is directly challenging Darwin's notion that art forms such as music provide no survival advantage to individuals.

This brings up the important point that two selection mechanisms that Jordania contrasts – namely natural selection and sexual selection – are united by the fact that both are examples of *individual*-level selection. Evolutionists generally contrast these mechanisms with „group selection“, where groups, rather than individuals, become the units of selection. Jordania, in rejecting sexual selection as an explanation for the traits he discusses, highlights instead the group functionality of these traits, but without acknowledging that this invokes group selection as an evolutionary mechanism. A critical feature of individual selection is that it places members of a social group into competition with one another. This applies equally well to sexual selection and natural selection. Group selection, by contrast, is a mechanism to explain *cooperation* among individuals within social groups. It does so in terms of between-group competition. Many of the traits that Jordania discusses as „secondary“ defense mechanisms seem to fit into this category, including loud music, dancing, rhythm, body painting, and collective identity.

My overall feeling in reading this essay is that Jordania, in arguing against sexual selection for many of these traits, invokes group selection but without

stating it explicitly. So, in looking at the broad suite of traits that Jordania is labeling as „Intimidating Audio-Visual Display“, it is critical to distinguish those features that seem to be operating competitively at the individual level – and could reasonably be said to be due to natural selection – versus those that seem to be operating cooperatively at the group level, and should be attributed to a group-level selection process.

That said, the group-level mechanisms that Jordania attributes to predator defense operate equally well for inter-group conflict as well as in the very opposite of predation avoidance, namely hunting. For example, the Pygmies of the central African rainforest are the most skilled elephant hunters in the world. But this hunting is nothing less than a highly coordinated group activity, and it is accompanied by rituals and musical forms specific to it. So, while loud music, dancing, rhythm, body painting, and collective identity can certainly be used as predator avoidance mechanisms, they have a multitude of other essential functions unrelated to predator avoidance, including animal hunting and inter-group competition. But even if we focus on the predator-defense aspect, it is the *collective*, rather than individual, aspects of these behaviors that make them effective for predator defense. Human dance would certainly be a very different thing than we know it to be if it was only ever done by individuals. We need an evolutionary account for why we dance in groups and why we sing in choruses and why we do so many other group-level ritualized behaviors. Natural selection still seems like the wrong mechanism to explain these kinds of arts behaviors in humans. So, I do have to agree with Darwin here that, if individual-level selection is the only mechanism available to us, then music, dancing, rhythm, body painting, and collective identity are indeed mysterious processes.

**Joseph Jordania**

### **Response to Steven Brown's comments**

The reviewer's central point of criticism is that I rely on the mechanisms of group selection model without explicitly admitting this. I am happy to accept his criticism and state that the strength of group selection model is clearly visible in such traits as universal human predilection towards group forms of singing and group rhythmically united dancing. I tried to avoid discussion of the two conflicting approaches to natural selection in social animals: individual and group selection models. But I am ready to state my view on this subject.

Distinction between „individual“ and „group“ models of selection is not always clear. Quire confusingly, scholars are still arguing what kind of altruistic