

## **Neanderthals and modern humans: big brains, ontogeny, and cognition**

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From the fossil record, as well as from archaeological and genetic data, we know (or we believe we know) that our species originated in Africa before 200 thousand years ago and started to spread widely within that continent and, subsequently, out-of-Africa. During these waves of diffusion, populations of *Homo sapiens* came into contact (sympatry) with other species and, particularly, the Neanderthals, first in the Near East and later in the territories north of the Mediterranean. Given the low population densities of the hunter-gatherer small groups, this prolonged period of sporadic interactions lasted tens of millennia and saw the ecological confrontation between two species that were, at the same time, similar and different from each other, although we know that they were partially interfertile, being capable of giving rise to hybrid individuals. Nonetheless, as demonstrated by their skeletons and genomes they were different species. This means that a significant diversity existed in terms of both developmental patterns and cognitive faculties, as various archaeological evidence also suggests. From this point of view, the respective different combination between bones (cranium) and soft tissues (brain) could have been decisive. Where Neanderthals maintain an arrangement of the cranium that we can define as archaic, despite the presence of a notable volumetric expansion, the globularization that is typical of modern morphology possibly gave rise to a peculiar arrangement of the nervous centers of the brain, with special reference to some associative areas. This may have resulted in a considerable cognitive and imaginative gap. Does this have anything to do with musical practices and related faculties?