b40 To grunt or chat < hypoglossal nerve >

> The earliest humans were endowed with a formidable mental life, but had to wait patiently for the arrival of a new tool, the gift of language. —Marc D. Hauser, *Wild Minds*.[1]
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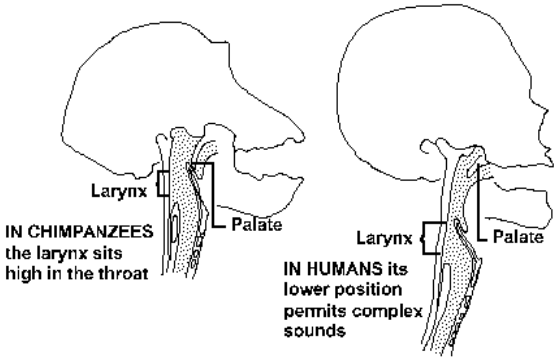
> Words are to the Anthropologist what rolled pebbles are to the Geologist—Battered relics of past ages. —John F. W. Herschel.[2]

Apes can make a range of sounds and gestures to communicate [3] but, with the exception of humans, they cannot articulate speech because of the high placement of their larynx; a primitive condition of hominids. Human babies have this as an initial condition that enables them to swallow when suckling and breathe at the same time. As the human baby grows the larynx descends and this allows for babbling to refine to speech and for the likelihood of choking (as the windpipe opening is then well below the level of the palette). Apparently, articulated speech (language) has survival advantages over mere body and acoustic signals that babies and even some fishes[4] make and which for air breathers outweigh the chance of choking.[5] For example, monkeys have a "leopard" call that causes the troupe to climb out on the thin branches of trees and an "eagle" call which causes the troupe to descend and hide. Babies cry, scream and smile for attention. These signals, instrumental in obtaining desired behaviourial responses in others is not speech. Self-aware humans communicate thoughts for reflection before any action, by referring to things in the syntax of a language. Indications are that Neanderthals were self-aware and communal. Could they articulate speech?



According to Richard F. Kay the size of the hypoglossal canal (a bony tube at the bottom of the skull) is an indicator of whether articulated speech is possible.[6] The hypoglossal nerve originates in the brain stem and passes through this canal and fans out to conduct movement commands to all but one of the tongue's muscles. Its size in modern humans (who unquestionably have the gift of the gab) is matched in two Neanderthals placed at roughly 60,000-70,000 years old, a 90,000-year-old "early" *H. sapiens*, and two *Homo* specimens dated 300,000-400,000 years old.[7] Its size in modern chimpanzees (known to be inarticulate) is significantly smaller in proportion to brain size, and this is also true in three fossil skulls attributed to *Australopithecus africanus* (hominins dating to more than 2 million years ago).

According to David DeGusta, the hypoglossal-canal to mouth ratios as speech-indicator hypothesis, may seem well founded, but by its premise, several living ape species, in addition to ourselves, most prosimians, and monkeys, should have speech. Also, dissections of five modern human cadavers, did not find that larger hypoglossal canals carry thicker hypoglossal nerves. "I think it's pretty clear that hypoglossal canal size has nothing to do with speech," he says, and "the date of origin for human language and the speech capabilities of Neanderthals remain open questions." [8] In short, do not wait with bated breath for this quarrel to abate. Comparative anatomy between species can be an indicator but is never a proof. Provocatively, gene *FOXP2* linked to speech in moderns, Neanderthals had.[9]

1.8 million years ago meat-eating *Homo erectus* had appeared and is associated with a wide range of stone tools with a variety that signals social groupings with complex behaviors. Recent studies of these stone tools are persuasive that most were made by right-handed artisans. Steven Mithen in *The Prehistory of the Mind* posits that the "erectus brain" was evolved to be divided like ours with one hemisphere that handled social interactions. "This is the most important aspect of both past and modern-day minds," he says. "It includes a whole bundle of mental skills we use to live successfully within larger groups." [10] Speech would not be inconsistent. As no other primate favors one hand over the other and the vocal equipment for speech is not theirs, speech has emerged in the time of our genus. The transition through natural selection to language from animal signaling—that was when cultural change eclipsed genetic change and is when began humanity. ❑