

On the antiquity of language: the reinterpretation of Neandertal linguistic capacities and its consequences

**Conclusion:**  
This article aimed to get rid of the idea that Neandertals did not have the capacity of language the way modern humans do. Arguing that Neandertals were probably not that different ideologically and cognitively from us modern humans and most importantly that their language abilities were very similar to that possessed by modern humans. The authors propose that language is truly older than once thought to be and that this was present in the ancestor Neandertals and modern humans shared, H. heidelbergensis. They also believe that the accumulation of small changes in language have resulted in the language and speech we use today. At the end attributing to Neandertals modern speech, double-articulation, some syntax, a correlated mapping to meaning, and pragmatics

**Common ancestor with Modern Humans:**  
H. heidelbergensis- from here they split and had very little contact

**Many say they lack language for the following reasons.**  
**Conclusion of this: that Neandertals lacked the specialized speech machinery, the higher language adaptations that would have gone with it, and the general cognitive flexibility to make good use of language.**

Consequences for the study of language and linguistics

1. It is necessary to start thinking that evolution continues to gather and change different aspects of language and other abilities until this day. Differences between branches do not contribute a significant amount to the relatively small differences in speech and language.
2. It is thought that the oldest ancestors held the basic foundations and the more complex speech system that we know to consist of phonology, syntax, and lexicon, came late making them the last to evolve. Language capacities were rapidly combined together in order to form what it is today.
3. Through findings they were able to suggest that some slight genetic differences could result in being a significant factor in deciding whether certain linguistic types are more likely to spread. With findings like this it may be possible to conclude more precisely different aspects about our ancestry's languages.
4. To find historical concepts investigators use comparative method of lexical parallels, through these they conclude that structural properties of language change in average less often than words.
5. All the information found until this day doesn't state the constraints of language it actually states the historical relatedness.

**Four distinct scenarios can be speculative assuming that both modern humans and Neandertals share similar speech and languages:**

1. Language shift:  
Modern humans adopted Neandertal languages, although said not likely to be true since usually those with advanced abilities are the ones that get imitated and not the opposite way.
2. Language extinction:  
Neandertals and modern humans would have had very little interaction but when they did they adopted modern human languages. Modern human language simply overpowered Neandertals language and culture. There should be very little linguistic diversification linguistics could discuss.
3. Pidginization:  
Here language was created by the simplification of a language. Seen within colonization and trade networks, were two distinct human groups dismantle two languages to create one in order to coexist in one area.
4. Low intensity contact:  
Thought to be the most likely according to the authors. There was some contact between both groups and during this time technological and material exchange was mostly happening from modern humans to Neandertals.

1. General anatomical differences: Neandertal robustness= strength + intelligence

2. DNA focused on mitochondrial DNA. Differences found= different species.

3. Fossils proved differences Study of fossils= differences in speech capacities.

4. Lack of Cultural products: Difference in cultural products= linguistic deficit

**The Skeletal Morphology:**  
Differences thought to be due to a genetic drift.

Summary of interpretations of DNA studies till this day:  
Thought there was no contribution by Neandertals to modern humans or if there was, it was lost within time.

Authors concluded there are 3 closely related branches that exchanged genes: Neandertals, Modern Humans, and Denisovans. Similar genes related to language but still not identical.

Conclusion: Neandertals and Denisovans had the basic genetics structure for modern language and speech. Although it is possible that modern humans may have progressed more regarding speech sounds, syntax, vocabulary, etc.

**Speech and Hearing:**  
H. heidelbergensis had a pattern of sound perception. Neandertals range of variation = modern human range. Resulted in conclusion that ear ossicles of Neandertals are modern. Two different controversies and proposals exist regarding Neandertals production of speech.

Culture and language Many believe that there is a lack of Neandertal's culture, although authors give a list of examples proving otherwise. Due to low population densities could be the reason why there seems to be cultural limitation.

It is thought Neandertals had a complex language. Usually languages spoken by small groups tend to disappear within time, which may be able to explain why we don't have Neandertal language today. But it is impossible for evidence of a complex culture to exist today if some sort of modern language did not exist.

1. Many believe that because Neandertals had hyoids that is connected to the air sacs meant they had a good speech capacity. Some believe it's not true.

2. Ability to control the respiratory muscle- self-controlling of the breathing is a prerequisite to be able to have complex speech production. This seems to be present in the common ancestor of Neandertals and modern humans therefore concluding that this ancestor was an articulate mammal!

# Notes

## 1) Common ancestor with Modern Humans: H. heidelbergensis- from here they split and had very little contact

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is thought that from here there was a split where Neandertals and modern humans had very little contact due to the different geographically areas that they inhabited. Throughout the rest of this work there will be different occasions where this concept comes to play, it was important to define first who the H. Heidelbergensis were for later purposes.

## 2) 1. General anatomical differences: Neandertal robustness= strength ≠ intelligence

Neandertal robustness was considered to imply the capacity of strength in order to compensate for the restricted intelligence.

## 3) The Skeletal Morphology: Differences thought to be due to a genetic drift.

- Neandertals

are considered to be different from modern humans because of cranial differences and post-cranial robustness. Neandertals have long and low brain-cases, the face had a low jaw and were chinless. These differences are thought to be due as a result of genetic drift.

## 4) 2. DNA focused on mitochondrial DNA: Differences found= different species.

significant differences were found between the genomes of a Neandertal and a modern human leading to the conclusion that they were a different species.

## 5) Summary of interpretations of DNA studies till this day: Thought there was no contribution by Neandertals to modern humans or if there was, it was lost within time.

- Some

of the first findings thought the study of DNA had the result of there being no contribution from the Neandertals to the modern human genetic, the reason being either because of no interbreeding or a relatively low one that was lost within time.

## 6) Authors concluded there are 3 closely related branches that exchanged genes: Neandertals, Modern Humans, and Denisovans. Similar genes related to language but still not identical.

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spite of this later on other results revealed that there was a more complex relationship not just between Neandertals and modern humans if not also with another ancient human. Through this study it was found that non-African living humans carried more shared derived alleles with Neandertals suggesting that these and modern humans interbred most likely somewhere in the Middle East. This same pattern was found with Denisovans, sister group of Neandertals only identified through their DNA. It is uncertain exactly when these three ancient lineages split. With these results the authors have concluded to state that it is impossible to think that there was a continuous progression of a single lineage leading to modern humans, but instead there are three closely related branches that exchanged genes. Within these three lineages there are similarities and differences; they share the same two amino-acid substitutions in FOXP2 which is the best-known gene hitherto linked to language therefore supporting the argument that Neandertals did have language and some genes that affect the brain and nervous system are different on the other hand. Considering these and others expressed by the authors the results show that all three ancient lineages were similar but not identical.

## 7) 3. Fossils proved differences: Study of fossils= differences in speech capacities.

When part of the fossil vocal tract and auditory system were recovered and studied it suggested the existence of important differences between Neandertal and modern human speech capacities.

8) Speech and Hearing:  
H. Heidelbergensis had a pattern of sound perception. Neandertals range of variation  $\approx$  modern human range. Resulted in conclusion that ear ossicles of Neandertals are modern. Two different controversies and proposals exist regarding Neandertals production of speech:

Investigators are able to find information about ancient abilities for speech production through fossilized parts of the vocal and auditory anatomy. It is known that the audiograms of modern humans is different from that of other species, with the results found through the study of these fossils of H. Heidelbergensis investigators were able to conclude that they had a pattern of sound perception very similar to modern humans. More recently there has been a study done on ear ossicles fossils of Neandertals concluding that the range of variation in the Neandertal ear is within the modern human range. Through these results it can be said that ear ossicles of Neandertals are modern.

9) 1. Many believe that because Neandertals had hyoids that is connected to the air sacs meant they had a good speech capacity. Some believe it's not true.

There is a big controversy regarding the larynx and the role of the hyoid bone. It is known that the hyoids of the Neandertals are essentially modern. The hyoid bone is connected to the issue of air sacs, the existence of these seem to have an effect on speech by controlling the distinctive speech sounds that are able to be produced. Many believe that because the Neandertals have this that automatically means they have a good speech capacity. There are certain investigators that believe this is not enough to suggest a modern capacity of speech. The authors believe the focus given to the larynx has been overestimated since "many mammals can dynamically lower their larynx during vocalizations, implying that the "rest" position is not necessarily a good indicator for the dynamic vocal capabilities".

10) 2. Ability to control the respiratory muscle- self-controlling of the breathing is a prerequisite to be able to have complex speech production. This seems to be present in the common ancestor of Neandertals and modern humans therefore concluding that this ancestor was an articulate mammal.

The other proposal consist of the capacity of controlling the tongue and the respiratory muscles. It is stated that the ability to control the tongue doesn't offer much information since the ability and size of this varies within all species. Therefore leaving as the most important the ability to control the respiratory muscle, since self-controlling of the breathing is a prerequisite to be able to have complex speech production. All stages of production depends on this cortical control. This seems to be present in the common ancestor of Neandertals and modern humans therefore concluding that this ancestor was an articulate mammal.

11) 4. Lack of Cultural products: Difference in cultural products = linguistic deficit

1. There was a significant difference between the cultural products of Neandertals and modern humans that was interpreted as having a linguistic deficit.

12) Culture and language: Many believe that there is a lack of Neandertal's culture, although authors give a list of examples proving otherwise. Due to low population densities could be the reason why there seems to be cultural limitation.

The principle differences many talk about when regarding the Neandertal and modern humans have to do with the believed that Neandertals have a lack of art and personal ornaments, the lack of projectile weapons, and the lack of campsites. However, the authors give an extended list of examples of these things that were proven to exist within the culture of the Neandertals. To understand the culture of Neandertals it is best to take a look into its demographic context. It is in Europe where many of the modern human descends from the Neandertals lived. The fact that Neandertals had very low population densities would explain why there seems to be cultural limitation since having a small population effects whether it survives or not.

13) It is thought Neandertals had a complex language. Usually languages spoken by small groups tend to disappear within time, which may be able to explain why we don't have Neandertal language today. But it is impossible for evidence of a complex culture to exist today if some sort of modern language did not exist.

The concept of language seems to be different due to the fact that it requires similarity of systems between communicators. Large populations try to avoid complex systems while small ones allow it, which is why highly complex languages are usually spoken by small groups. From here the authors conclude that Neandertals may have had one of those complex languages when compared to a bigger population probably sharing complex aspects with languages spoken by small societies today. Also believing that there may have been more than one language spoken within Neandertals. Usually languages spoken by small groups tend to disappear within time, which may be able to explain why we don't have Neandertal language today. But it is impossible for evidence of a complex culture to exist today if some sort of modern language did not exist.

## 14) Consequences for the study of language and linguistics:

After concluding the shared ancestor between Neandertals and modern humans the authors stated that the biological and cultural evolution continued after these two split from this common ancestor. With the acknowledgment of minor differences in speech and language arguing that this would still allow for comparable and compatible speech and language between both. After stating this the authors decided to list a few consequences deriving from this perspective:

15) 3. Through findings they were able to suggest that some slight genetic differences could result in being a significant factor in deciding whether certain linguistic types are more likely to spread. With findings like these it may be possible to conclude more precisely different aspects about our ancestor's languages.

3. The third consequence goes back to the concept of genetics and linguistic being related. The authors quote Dediu and Ladd's investigation where they were able to show a relationship between the appearance of certain genes involved in brain growth and the ability of tone languages. Through these findings they were able to suggest that some slight genetic differences could result in being a significant factor in deciding whether certain linguistic types are more likely to spread. With findings like these it may be possible to conclude more precisely different aspects about our ancestor's languages.

16) 4. To find historical concepts investigators use comparative method of lexical parallels, through these they conclude that structural properties of language change in average less often than words.

4. In order to extend the reach of historical linguistics investigators use the comparative method of lexical parallels or cognates to obtain more information. Through these studies linguistics are able to conclude that structural properties of language change in average less often than words themselves. The hope is that certain combinations of structures are found to be significantly conservative that their presence would allow reconstruction of themselves and with these combine other information to be able to reconstruct languages or at least part of their structure in order to be able to relate it across the tree for language families.

17) 5. All the information found until this day doesn't state the constraints of language it actually states the historical relatedness.

5. With the belief that language is more antique than what was once thought of, new consequences come about. It has always been thought until this day that the information offers the opportunity to conclude the constraints found on the linguistic capacity. Recently, according to the authors, developments have revealed that change in the structure of language has been slow, meaning that if the languages we use today are descendants of the languages found previously these new ones do not represent properly the possible languages at all. Resulting in the conclusion that all the information found until this day doesn't state the constraints of language it actually states the historical relatedness.

18) 4. Low intensity contact: Thought to be the most likely according to the authors. There was some contact between both groups and during this time technological and material exchange was mostly happening from modern humans to Neandertals.

Although they do state that there is a chance Neandertals had their own cultural tricks that could have induced linguistic loans and language structure.