

THE ORIGIN OF THE MIND AS SEEN THROUGH AN ARCHAEOLOGICAL LENS

**Steven Mithen, Professor of Early Prehistory at the Department of
Archaeology at the University of Reading**

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Welcome to 'Sciences of the Origin' where we delve into the philosophical and methodological foundations of the scientific quest for the origins of the universe, life, and mind. The main aim of this project is to discuss common methodological challenges of cosmology, biology, and archaeology. The 'Sciences of the Origin' interviews are supported by the University of Oxford project 'New Horizons for Science and Religion in Central and Eastern Europe' funded by John Templeton Foundation.

We bring you an interview with Steven Mithen, a renowned expert in prehistoric archaeology. He is Professor of Early Prehistory at the Department of Archaeology at the University of Reading. His work explores the late Pleistocene and early Holocene hunter-gatherers and farmers. He is also a proponent of cultural heritage for sustainable development and community archaeology, and is a well-known expert on the evolution of the human mind, language, and music. He has published many works, the most well-known of which are the books 'The Prehistory of the Mind' (1996) and 'The Singing Neanderthals' (2005). Steven is one of the pioneers of cognitive archaeology, striving to find answers to archaeology's most difficult questions. He is also an exceptional educator, capable of making the most complex reasoning in archaeology accessible to the wider public. The interview is hosted by Monika Milosavljević, Assistant Professor of Archaeology at the University of Belgrade.

Monika Milosavljević: Hello, Steven, it's great to have you here for today's interview.

Steven Mithen: Hello, Monika. I'm delighted to be invited to take part in this fantastic series that you have organized.

MM: Thank you very much. I would like to start by asking what work, done by you or others, prompted you to explore the prehistory of the mind and the origins of art?

SM: Archaeologists often spend their time focused on the details of the past. We dig in the ground we find artefacts, and we do meticulous recordings of objects, fireplaces, structures, cave paintings and so forth; our work is largely dominated by the very detailed. Because of that, sometimes, archaeologists forget to ask about the very big questions. During the earlier part of my career, maybe about 25 or 30 years ago, I was aware of people in other disciplines asking those big questions about the nature of being human. Biologists, physicists, linguists were speculating about the human past and how intelligence, creativity and language evolved; but none of them were talking about the archaeological record and often they had little idea about the fossil record. I thought 'Archaeologists need to contribute to this because we are the ones that understand the complexities of archaeological data'. Consequently my interest in asking the 'big questions' arose because academics from other disciplines were doing so but either neglecting or misusing the archaeological evidence.

MM: Thank you for asking the big questions. So, concerning the prehistory of the human mind, what archaeological evidence do you think is most important in that regard?

SM: The archaeological evidence falls into two broad categories. On the one side there are human skeletal remains, and many people writing about the evolution of human mind and language focus on these alone. They may look at the size of the brain or reconstruct the vocal tract. The other type of data are the artefacts that our ancestors discarded and other signs of their past behaviour; how they are distributed across past landscapes and how they change through time. For me, the skeletal evidence appears of less significance for asking questions about the evolution of mind and language than the material culture. By 500,000 years ago hominins were present with brain sizes equivalent to our own, but their material culture indicates they were thinking and behaving in a very different way to modern humans – *Homo sapiens* after 100,000 years ago. Overall, I think the information

one can gather from the human skeletal remains about the evolution of the human mind and language is relatively limited compared to what one can potentially extract from looking at how stone tools were made, how people moved around their landscapes, how they organized their societies, their economic behaviour, and dispersed across the globe.

MM: Based on all of those contexts, artefacts, complex relationships, and landscapes, what are the key differences and similarities across different human kinds, according to your research? Let's say *Homo sapiens*, *Homo neanderthalensis*, newly discovered Denisovans, and so on.

SM: That's a huge question, isn't it? (laughs) First all, I must stress the unity among all humans. If we were talking 30 or 40 years ago, we would have had a rather small number of humans. We would have viewed *Homo habilis*, *Homo erectus*, *Homo neanderthalensis*, and *Homo sapiens*, as a progressive evolutionary ladder. Today, we have several more humans, showing much greater diversity in our genus than previously recognised. We now have *Homo antecessor* and *Homo heidelbergensis*. We have the Denisovans identified from genetic material alone. We have *Homo floresiensis*, *Homo naledi*, and *Homo luzonensis* from the Philippines. For most of the human past, several types of humans were alive at any one time – the normal situation for any genus. Today is a unique situation with just one species alive, *Homo sapiens*.

With the new range of human species now known, it is evident that one can be human – a member of the genus *Homo* – in several different ways. We must not make value judgments between these types of humans. It'd be like making a value judgment between a lion and a tiger; they're both unique and fully-adapted animals, just like *Homo sapiens* and *Homo neanderthalensis* and *Homo ergaster* and *Homo habilis* were all perfectly formed, brilliantly adapted, unique types of humans. It is important that we stress their common features. The most important of these is their large brain sizes compared to other primates and their extensive use of material culture, at a level that is much greater than what we see in any other types of animals. Chimpanzees, crows, and otters all use material culture but this is only fundamental to human adaptation. In general, it is important to stress the unity in humankind before we start looking for differences.

Now, what are the differences? Well, I think *Homo sapiens* stands out from all the others. There is one obvious reason –we're the only one still living on the planet. All the others have gone extinct. 'Why is that? Is that something to do with us – did we push all other types of humans into extinction? Or is that just by chance?' We don't know. What we do know, is that *Homo sapiens* has a remarkable capacity for communication, the use of language, while that remains problematic among other types of humans. My own view is while *Homo erectus*, *heidelbergensis* and *neanderthalensis* had complex and sophisticated forms of communication, only *Homo sapiens* has language as we understand it. My view is that this emerged at around one hundred thousand years ago. Modern human language uses words and grammar, which influences the way we think as much as how and what we can communicate. The technological developments after 100,000 years ago, that ultimately led to the emergence of farming during the early Holocene, derive from the impact of language on the way humans thought and hence behaved: words enabled the formulation of complex and abstract concepts providing capacities for imagination and creativity beyond those found in other types of humans.

MM: You said something about the evolution of language but can we talk a bit about the role of music in the evolution of the human mind?

SM: Yes! The origin of music is a fascinating question that has been neglected by archaeologists and other disciplines. The big questions that archaeologists must address include 'What are the fundamental characteristics of being human?' and 'What's important for being human and how did that arise?' One of the human universals, found in all known societies, is making music. Singing, dancing, using instruments—it's pervasive in all cultures. Why is that? Why is music important to us individually and to society as a whole? When I began addressing these questions, I started by reading what musicologists, psychologists, philosophers and scientists, including Charles Darwin, had written about music. I also looked at the role of music-like communication in animals, and thought about how our ancestors and relatives communicated before language.

I've come to the view that a music-like a form of communication is much, much older than spoken language with words; it was the ancestral proto-language. Monkeys,

chimpanzees, whales, and birds communicate using variation in pitches, rhythms, tones, and timbre. That is exactly what our ancestors were doing, but in a much more sophisticated way. *Homo sapiens* embellished that proto-language by inventing words. That resulted in two types of communication systems that we now use for different purposes: language and music. Music continues to fulfil many of its ancient functional roles such as communicating emotions and social bonding, but much of its ancient, communicative powers have been overtaken by spoken language. I wrote a book called '*The Singing Neanderthals*' because I think Neanderthals did lots of singing and dancing, partly for their own enjoyment but partly because it was key to their survival in the ice age world.

MM: I like that connection, and thinking about emotions and music with regard to animals and humans is very important in interpreting the past. So, can you tell us about the human capacity for visual symbolism? How can we interpret that capacity?

SM: This is really difficult. One of the hardest things is to define what a visual symbol is, because visual symbols can be artificially created by humans or they can be unmodified natural objects. Often in my pockets, I have little shells or stones that I have picked while walking, keeping them to remind me about somewhere nice I've been. They are symbols to me, but nobody could know that. This makes a lot of archaeology difficult because when we're excavating a site from an ancient type of human, we might find unmodified objects that had been transported to the site. Did they have symbolic importance? We have no way of knowing.

The other type of visual symbols are those that humans make. In archaeology, the earliest forms and the most well-known are, of course, the first paintings from around 40,000 years ago. We find these not just in the cave of France and Spain, but also in Asia and Australasia. We can be confident that these images are representing something symbolic, even though we do not know the symbolic code. They might be hand prints, images of animal, or an abstract . Making visual symbols appears to be a capacity that all modern humans possess and one absent in all other animals. Looking at the archaeological evidence, it's difficult to argue that any humans prior to *Homo sapiens* had

that symbolic capacity. Some argue that Neanderthals did. They point to potential paintings in caves, blobs of paint on cave walls that have been dated to around 60,000 years ago. If they were made by Neanderthals – and I remain sceptical – then Neanderthals must have had only a limited symbolic capacity for visual symbolism because the evidence is so scarce; symbolism was not pervasive in their lives and critical to their social life, as it is for modern humans. For them – for us - everything is a potential symbol, even if this is unintentional. My phone's a symbol, my glasses are a symbol, the jacket I'm wearing is a symbol, because you will be reading all information into that, either consciously or unconsciously. So, we live in a world where everything is symbolic. I think Neanderthals lived in a world where a few things may have been semi-symbolic and other early humans lived in worlds where nothing was symbolic at all.

MM: That was a fascinating answer to this question, but the aim of this project is to talk about the problems of archaeological evidence, so we should be more explicit about that. For example, in the early days of archaeology there were many stereotypes in reconstructing the origins of different phenomena in prehistory, specifically when discussing Neanderthals. But what do you think are the blind spots of our own time when we are talking about the past, let's say prehistoric times?

SM: That is a really interesting question. The history of archaeology has been pervaded with views that we now recognise as biased – views that reflect the mores of society of the time that we would now consider sexist or racist. This is exemplified by attitudes to Neanderthals, with the first skeletal remains interpreted as shambling thuggish brutes. The problem we have today is that we are not necessarily aware of our own biases - unconscious bias pervades research that seeks to be objective. I know that in 20 or 50 years' time, and possibly much sooner, somebody will look back and say, 'Oh, well, Steven Mithen was so biased by the political views at the time'. We must seek to expose our own biases to become as objective as we possibly can when interpreting archaeological evidence.

One of the pitfalls that some academics fall into is to confuse recognising differences with making value judgments. When I am speaking about the differences between Neanderthals and modern humans, for instance, I am often criticized by those who claim

I am trying to make *Homo sapiens* better than Neanderthals. I am not. I'm just seeking to make an objective, unbiased interpretation of the evidence that leads me to a conclusion that Neanderthals and *Homo sapiens* had different types of cognition. I worry that we have become too afraid of saying that there were differences in the past – differences between societies, between types of humans, and between individuals – because of we are accused of making value judgements.

Another issue we face is that the archaeological record remains biased towards certain parts of the world. We still know so little about the deep human past in large areas of Africa. East and South Africa have been explored but the long-term past in West, Central and Northern Africa is largely unknown. Similarly for other regions of the world, such as East Asia. This leaves our interpretations of the past biased by the quantity of research that has been undertaken in Europe and in ex-colonial regions such as SW Asia. Because we are working with a very partial archaeological record, it is difficult to develop a comprehensive understanding of the human past.

MM: Thank you for this because I agree. The history of the discipline is important for reflexive thinking. As Alison Wylie said, 'Reflexive thinking in archaeology can be concrete', so it should be concrete for us to have better insights. But with respect to the indirect nature of archaeological evidence, what do you think are the best practices and methods to prevent the selection effect when researching the origins of art or the mind? You said something about interdisciplinarity, but can we go into more detail on that?

SM: I think the best interpretations of the archaeological evidence are made by those who have first-hand experience of field archaeology – excavating, recording artefacts, writing reports. Engaging in the whole archaeological process, rather just digging or just studying finds in the laboratory, helps to avoid imposing biases or neglecting factors that cause variation in the archaeological record.

I am familiar with academics coming into archaeology from disciplines such as philosophy, psychology or linguistics, and being rather selective about the evidence they use and failing to appreciate the complexities of archaeological evidence. How could they? If we are going to have a prehistory of the mind, archaeology has got to be the lead

disciplines. But archaeologists have to work in an interdisciplinary manner because archaeology alone isn't going to give us the answers. We must work with the theories, the data, the ideas, and the methods of psychologists, philosophers, linguistics, anthropologists, geographers, and so forth, because all those disciplines have something to contribute. Doing that by ourselves is difficult because archaeologists will never be able to fully understand the complexity of ideas and data in those disciplines. I'll read selective areas of psychology and philosophy and pick and choose what seems best for my approach. We are all predators on other people's disciplines and sometimes one does need to stick one's head above the parapets and say, 'Well, I think this the mind works and evolved'. Often, you get shot down and it can be extremely painful, But that's the way that research makes progress.

An alternative approach is to get academics from multiple disciplines together in a single room (or virtual room) so they share their expertise and work together on a common problem such as the origin of art or whether Neanderthals had language. This is a very good idea, but is often difficult in practice – academics from different disciplines often simply 'talk past' each other.

MM: Can I ask one more question about evidence? So how does the absence of something serve as a supporting evidence in relation to the evolution of the human mind? I'm thinking about the lack of abstract thinking or symbolic thinking.

SM: That's the massive question. Let's go back to Neanderthals again. There is either none or very limited evidence for Neanderthal 'art'. We might then conclude they had no capacity for symbolic thought. Well, maybe they made lots of figurative art in ice and from plant materials that have not survived in the archaeological record. A well-known phrase is that an 'absence of evidence, is not evidence of absence'. What do we do? I think we must work in the framework of testing hypotheses. We have to say, 'On the basis of the current evidence, it appears that Neanderthals did create visual symbols'. Now that is a hypothesis that can be tested because if anybody were to excavate a site and find a little Neanderthal carved figurine in a sealed context, which is undeniably Mousterian, Middle Palaeolithic, that would simply falsify that hypothesis. It is not, of course, as easy

as that. The recent case for Neanderthal cave art provides a good example. The dating of calcite to 60,000 years old over deliberately made designs using red pigment on walls within Spanish caves indicates the designs were made by Neanderthals – the only humans in Europe at that time. But are the dating methods accurate? Might there have been modern humans in Europe at 60,000 years ago that have otherwise remained undetected? Are the designs of red pigment symbolic? Testing hypotheses in archaeology is always problematic. Archaeology is not alone. The absence of evidence is a problem in many, probably all, disciplines

MM: Yeah, and we should think about strategies for that. So, when you talk about traces of evidence of language-mediated behaviours, that makes me think about traces of something that is language-mediated and something that is not. So, can you explain that?

SM: Transmitting factual information is very difficult without language. After 100,000 years ago, we can see a ratchet effect in culture change – innovations become more complex and build on each other from one generation to the next. That requires language to not only transmit concepts and detailed technological information from one generation to the next, but also to enable reflection and improvements in design by sharing ideas. Before 100,000 years ago there was immense stasis in the archaeological record. The Neanderthals, for instance, made the same types of tools year after year for hundreds of thousands of years, just as *Homo erectus/ergaster* made handaxes. There was no cultural progression, no ratchet effect because they lacked language to transmit technical skills, concepts, and to share ideas. Overall, the cultural ratchet effect is the best evidence for language-mediated behaviour.

Language not only facilitates the transmission of information but also influences how we think and perceive the world. In my current research, I am looking back to work by people like Benjamin Lee Whorf and Edward Sapir in the 1950s about linguistic relativism. The new words invented by *Homo sapiens* 100,000 years ago acted as anchors for new concepts that without words were difficult to hold in the mind; those concepts acted as the foundations for more complex concepts, that required further new words as their anchors. As humans dispersed from Africa, the on-going invention of words led to the

diversification of languages and ultimately different ways of seeing the world. Overall, language mediates behaviour in two ways: it allows better communication and the passing on of factual information; it also changes the way we think by enabling, new and more complex concepts in the mind. The on-going invention of words has been, and remains, a key driver of culture change

MM: I would like to ask (laughs) one more question about the evidence. Maybe it's important to discuss the somewhat ambivalent interpretation about evidence in archaeology between scholars and the general public. For example, I would like to ask you about the flute from the Divje Babe site in Slovenia. Can you discuss how we differentiate evidence? Is that archaeological evidence for music or is it something else?

SM: You've picked one of the most difficult artefacts, because professional archaeologists themselves are divided on its interpretation. The so-called flute from Divje Babe cave in Slovenia is a piece of bear femur, and it's got at least two, potentially more, circular pierced holes in it. It looks like a flute some sort of blowing instrument, and that's how it was originally interpreted and published. The public were rightly fascinated by the so-called discovery of a Neanderthal flute – we would all love to find a Neanderthal flute! Later research described gnaw marks over the bone and noted the holes appear to have been made by canines of a carnivore: the so-called flute was just a chewed bone that has an incidental appearance of a flute – especially to those who were keen to find a Neanderthal musical instrument. But other archaeologists looked at the bone again and supported the idea that it was artificially manufactured. What are the public supposed to believe when professional archaeologists cannot make up their minds? I've never examined the Divje Babe 'flute' personally—I've only seen the second-hand reports—and my inclination is that it is more likely to be a chewed piece of bone, but I'm open to be persuaded. At the present time, we must live with a difference of opinion.

This example emphasises the need for archaeologists to communicate the challenges of interpretation more effectively than we do at the current time. I still find students at my university who start their degrees in archaeology thinking it is about treasure hunting, rather than an advanced academic discipline that involves the meticulous collection of data and application of advanced scientific methods, within contested theoretical

frameworks. There has, of course, been huge advances in science communication from all disciplines during the last decade, reflecting a thirst for knowledge and ideas wither the general public. We need to keep enhancing the communication about our evolutionary past, making the public aware of the challenging nature of interpretations exemplified by the Divje babe 'flute'.

MM: I like that you stress that we use different lines of evidence and different approaches and that archaeology is also about thinking rather than just giving results. So, what would you say about the position of prehistoric archaeology today among the sciences that combine the epistemology of hard sciences, social sciences, as well as humanities?

SM: Archaeology is an amazing discipline, one that is already very broad and yet it becomes broader every year. While it is a discipline that needs scientific methodology at its core, its key subject matter is people, and we all know that people are unpredictable, difficult to understand, and their study requires theories and methods from the humanities and social sciences. Archaeologists can specialise in certain areas. Many are scientists, applying techniques developed in chemistry, biology, genetics and so forth to archaeological data. Indeed, the most significant advances in archaeology during the last decade has been made by geneticists who have transformed our understanding of human dispersals in all periods and parts of the world. When it comes to interpretation, however, such as why those dispersals occurred when and where they did, we need also to draw on the humanities, addressing issues about human motivations. With the advent of new methods, such as those from human genomics, archaeology is a continually evolving discipline—it has to be broad and intellectually demanding, otherwise it would be unable to address the big questions about being human. If it didn't have that breadth and that challenge, it wouldn't even be able to ask those questions.

MM: So we are definitely living in great times as Kristian Kristiansen said in his article about the scientific revolution with the application of genetics today. But maybe related to the COVID-19 crisis, I want to ask you about what can we learn about the plasticity of the human

mind and creativity in the human evolution that can useful for today's world during this crisis. So help us please. (laughs)

SM: Our knowledge of the past – whether the deep past of prehistory or that of this century - provides a useful lesson for thinking about COVID—that societies go through bad times, they not only come out of bad times, but they can reshape themselves for the better. The classic case is what the West, more particularly my country Britain, went through during the Second World War. People lost loved ones, they fought, it was a terrible, terrible time. When we came out of the WWII, we remade our society. We had a new government, we created our national health service. That was a consequence of those challenging times during the war and during the 1930s, creating a recognition that we had to remake our society in a better way. And I think that's a lesson for COVID. The pandemic exposed many of the inequalities in our society that had remained largely hidden to many people. The UK suffered an especially large number of deaths. That was partly because of appalling decisions made by our government and prime minister. But it also reflected the level of differences between the rich and the poor in our country, emphasising how ethnic minorities are often some of the most deprived people. We knew those disparities, but their consequences became blatantly exposed as the mortality statistics accumulated. My hope is that we can come out of the pandemic and remake our society in a more positive way, one with greater equality of wealth and opportunity; a more caring society. We can already see positive outcomes of the pandemic experience. We have made huge progress in using online platforms for meetings, reducing the need for people to travel around the world with its carbon costs. The value of science, and the need to invest in science, has been truly demonstrated by the remarkable development of the vaccines.

That capacity to make intentional change to our society is also demonstrated by the long term past. It was only 10,000 years ago that we were living as hunter-gatherers. That's incredible. We had no cities, no towns at all. And within a mere 10,000 years the majority of us now live in urban settings, with advanced health care and able to talk with people on the other side of the planet. The human capacity for innovation is immense. This ultimately derives from our use of language that emerged 100,000 years ago and sparked

the ratchet of culture change. The challenge is to funnel that capacity for change towards social justice and environmental protection: with the current inequalities in wealth throughout the world, the loss of biodiversity and our climate emergency, our record is extremely poor. But we can turn it around.

MM: I would agree. And I would say that what you said is amazing and it's nice to conclude there because there's some hope in your words. So thank you very much, it was an honour to speak to you.

SM: Thank you so much, Monika, it's been very enjoyable. And good luck with the rest of the series.

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