TPWKY Special Episode - Steven Mithen

EW: [00:00:00] Hi, I am Erin Welsh and this is, this podcast Will Kill You. You are listening to the latest episode in the TPWKY Book Club series where I chat with authors of popular science and medicine books about their latest work. Part of what I love about these episodes is getting to read about such varied topics, whether it's measles or tuberculosis, the pelvic exam or gaslighting in medicine, road ecology or animal senses. I am always learning something new. We've showcased some fascinating books so far this season and in past seasons, and we've got more great books coming up. To check out the full list of books featured in these book club episodes, head over to our website thispodcastwill killyou .com. Under the extras tab, you'll find a link to our bookshop.org affiliate page, which includes several different TPWKY related lists, including one for this book club. Another thing that I love about this series and just making this podcast in general is hearing from you all about these episodes, your favorite books, questions you wanna ask, books you'd like to see featured on a future episode, suggestions for future topics, and any other thoughts you have. The best way to get in touch with us is by filling out the contact us form on our website. Two last pieces of business before we can get into the book of the week, and that is to please rate, review, and subscribe. It really helps us out. And if you haven't heard already, we are now on YouTube. That's right. You can find full videos of most of our newer episodes on Exactly Right Media's YouTube channel. Make sure you're subscribed so you never miss a new episode release.

EW: Have you ever put your foot in your mouth or held your tongue or maybe you didn't and let the cat out of the bag? Do you have a friend that's a total chatterbox or met someone who has a way with words taken by themselves? These idioms don't really make literal sense. I'm not really asking who is bendy enough that they have actually inserted their foot into their mouth. I mean, who has said something embarrassing that they shouldn't have? We use idioms like these to communicate a feeling as shorthand for what might require a longer description or just to add a little fun. And the utility of idioms gives us a glimpse into the incredible power of human language. Our capacity for language sets us apart from all other species. It has shaped the evolution of our species, our societies, our cultures, our history, and it will continue to do so, while also being shaped by us. How we ever evolved this ability is so mind-boggling that ironically, I find myself at a loss for words. Fortunately, my guest for this episode has not only the words to describe language evolution, but also the research to back them up. In today's episode, I'm joined by Steven Mithen,

Professor of Archeology at the University of Reading and Author to discuss his latest book, the Language Puzzle: Piecing Together the 6-Million-Year Story of How Words Evolved.

EW: In this tremendous undertaking, Professor Mithen takes readers on a tour spanning hundreds of thousands of years and across many diverse fields of study, from linguistics to archeology, genetics to neuroscience, and beyond. What results is a comprehensive picture of how we came to have language. How do babies babble one day? And then the next outpours a flood of words. What can primate communication today tell us about the early stages of human language? Where do toolmaking brain size and bipedalism fit into the language puzzle? Stay tuned. We'll take a quick break and get into all those questions and more.[00:05:00]

EW: Professor Mithen, thank you so much for taking the time to chat with me today. I really enjoyed your book, the Language Puzzle for so many reasons, but I especially loved how you integrated many distinct fields of study, ones that you might not normally encounter in the same place. Why is this interdisciplinary approach or perspective so crucial when it comes to exploring something like the origins of language?

SM: We really don't have any choice because language is such a, such an incredible phenomenon. I mean, it uses not only our vocal tracks to make the sounds, or you can use your hands to make sign language, but that relies on our physiology. I. Ultimately our brains. So we need to draw not only on human anatomy, but also on neuroscience and psychology. But that's just a small part of it because sitting behind all those is the genetics of language. And then we have to actually think about how humans evolved. So that takes us into the archeological record of human ancestors, the fossil record, and the archeological evidence for how they behave. Then we've also gotta look at other animals because we're closely related to the chimpanzees who've gotta think about how they communicate.

SM: And of course, the other big areas of disciplines is language itself, linguistics, which is a, um, a hugely complicated and diverse subject. And around the margins of that, we move into subjects such as music and philosophy and so forth. So to really address the evolution language, you've gotta find the, the evidence and the right theories and the right interpretations. In all these different disciplines and then try to join them together. And that's why I call the book the Language Puzzle. 'cause it's like finding bits of a jigsaw puzzle, gradually piecing them together until a picture emerges of how. This remarkable ability that we have to communicate via language could have possibly evolved.

EW: Yes. And I am really excited to dig into some of these individual pieces of the language puzzle. But before we do that, maybe we should take a step back and just define what language is and how is language different from communication.

SM: Yeah, I mean that, that's easily said, but, but it's quite challenging and many people would define language differently because of course we do talk about how chimpanzees and whale and birds have language, but that's a very different type of communication system to what we should think of as language, I suppose the key elements of. Spoken language or signed language, are they discrete units called words and words have shared meanings. And often those meanings are entirely arbitrary. So you know, I can say a word like a tree or a dog. And unless you have some shared understanding you, you won't know what I'm naturally talking about 'cause it is arbitrary. And then we can combine those words in different orders. To generate a particular meaning. And you can also interpret that meaning that I say, so if I say the man bit, the dog, it means something entirely different from the dog bit, the man, it's the same words, but the order is playing a role as well.

SM: So really, language has got units of, um, communication, words and rules for how we combine them together to convey larger meanings. And of course, there's so many different types of language which have. All their different types of words and different types of rules. It's incredibly diverse there. You know, there's over 7,000 languages in the world today, which is probably a tiny fraction of those that ever existed. Right. So it's a, it's a remarkable, it's a remarkable phenomenon, but it's those two key aspects that I think distinguish it between the communication systems. All other animals and some other communication system of that we use like, like music or, or art and, and so forth, which are also ways of communicating, of course.

EW: That in itself is, is a fascinating aspect of this. Just the other ways that we communicate beyond language. Um, yeah, and it got me wondering, you know, using this definition of language with the components as you just laid out, could you see any prerequisites for a species or a lineage? That would be necessary for language to evolve within that group?

SM: Yeah. Yes, you can do, because I think you have to, I mean, ob obviously you need a, a sufficiently large brain to be able to contain a sufficient number of different words to make a viable language. You also need to have a vocal tract, which can make a sufficient number of different sounds. Which can be joined together syllables to make words, but they also need to be made in a consistent manner. [00:10:00] So that if I want to say a word, I'm going to pronounce it

broadly the same each time. Otherwise you wouldn't know what I'm talking about. So if we look at, say, chimpanzees, one of their constraints in vocalizations is that they, they have a limited ability to have that consistency. Because of the nature of the vocal tracks. And they also have a limited ability to make a sufficiently wide range of sounds, again, because of the way their, their jaws are particularly elongated, which makes a very different shape of vocal track to which we have. So you need some basic anatomy in place to make, be able to make the sounds and you need efficient sides of brain. To be able to remember those sounds, remember the meaning of words. Now, those thresholds were probably passed pretty early in human evolution. Mm-hmm. So I don't think they are, um, you know, anything restricted to our species. I think they must have been shared with many of our ancestors.

EW: Let's take a quick break and when we get back, there's still so much to discuss.

EW: Welcome back everyone. I've been chatting with Professor Steven Mithen about his book The Language Puzzle, piecing together the 6 million year story of how words evolved. Let's get back into things. The natural outcropping of, of this is the languages as we use in human language, as you said, it involves this, this vocal component or sign language. The bottom line is, would we be able to recognize language in another species if it looked far different from ours?

SM: Yeah, I guess so. But it, but Erin, just, just remember I'm watching you on a video. You are gesturing the whole time as you speak, right? So, so, you know, when we talk about spoken language. It's a, it's a fully integrated system with mm-hmm. Facial expressions with body posture and very often with gesturing with hands. And some people say it's that sort of physical movements that conveys so much of the meaning of what we want to say. And of course it is also, it's not just the words, it's our intonation. It's the prosody of language that, that musicality of language that can put a particular meaning on a particular type of phrase, whether you're angry or happy or pleasing, so forth. Um, obviously we can do some very clever studies on the communications, whether by chimpanzees or by whales or birds. And we can see that they have some elements which are certainly important to language today.

SM: So whether you are a chimpanzee or, or a young bird or a young, well, you do learn the communication system of your community. I. It's not just genetically present. You ha there's some learning. So you'll grab learning a particular way of, of communicating. And there are certainly are some aspects, certainly in communication that are word like, and language like, so they're able to control. The loudness, which they speak, or the duration of a phrase, they'll

take account of who else is around when they, when they make a vocalization, because they know they want to inform some people, but not others. Now, all of these are crucial elements of our spoken language as well. In themselves. They don't constitute language by themselves. I'm sure we can see the same, make the same comparisons with birds and with whales, but of course they're much more evolutionary distance and their communication systems are one more of if they have language like elements, it's more one of convergent evolution. Whereas with chimpanzees, we shared an ancestor just about 8 million years ago, so, and that ancestor probably gave rise to both chimpanzee type communication today and our language today

EW: to think about the convergent evolution possibilities of, you know, what else language would look like, I think is a really intriguing part, but I think maybe we'll stay in the realm of, of humans or hominins. And I'd like to now turn to the past, to our hominin ancestors. What can we infer about the origins of language from their fossil remains?

SM: It's a huge challenge. I, I'm sure I don't need to tell you that, or, or our listeners that, and you know, it's a slightly odd subject for an archeologist to, to, to tackle because the past is absolutely silent. You know, I can't hear people talk in the past and so forth, but we have no choice because if we're going understand language, we've got to look at evolutionary history. We can look at the skeletal remains or the fossilized remains, and we're able in some instances to um, reconstruct. Shape all these parts of the, of the vocal tract, because sometimes we [00:15:00] get very small bones remaining, or particular parts of the cranium that indicates how the face and the, the ln and so forth would've, would've been positioned. And we can see that even by 500,000 years ago and probably earlier. From those little scraps of bone, the vocal tract was probably much the same as ours today. Um, we can also find tiny ear bones from our human ancestors going back again, hundreds of thousands of years, and we can look at the shape of the ear bones.

SM: That influence our hearing, our audio track, and we can also see when they are most similar to ours. So we can use these bits of fossilized remains to reconstruct as far as we can the both the vocal tract and the audio tract. And by 500,000 years ago, they're looking sufficiently similar to ours so that we can say the physical capability of language was there. Whether the mental capability was there or not is a another question. Now, for that, of course we can look at brain size, um, but it's not clear that there is a particular threshold of brain size that we, we need for language. You know, how many neurons would you need to be able to have lang? We don't know. And of course, very young children with much smaller brains than adults, they have fabulous language skills. So it's

not clear to me, it's absolute size of the brain is important. It's probably the way all the neurons are networked inside, connected inside, but of course, that's something that we cannot see as archeologists. But to get some insights of that, we can look at aspects of tool making, hunting, social behavior, whether building fires or making hearts, because all of those are complex behavior that must have drawn either directly language skills. Or equivalent cognitive processes.

EW: I, I appreciate that layout of like, okay, these are the possibilities, but whether or not language itself would've, would've emerged is a different question. Mm-hmm. And you mentioned a few different things that would've driven or would've been an obvious need for language. And of course today, you know, we use language. For literally everything. It's impossible to imagine things that we don't use it for. But would there have been particular drivers of, or like important reasons that communication would have been elaborated in this way to lead to language for these early hominins?

SM: A common argument among many anthropologists and one that that I tend to support is that one of the earliest functions of language would've been for building social bonds between individuals. And of course that remains one of the primary uses of language as in chitchat, gossip, and so forth. Now, why that became important was that if we go back to about 4 million years ago, our Hominin ancestors, which were probably not much more than one and a half meters high. Rather defensive creatures by themselves. They're increasing living in, in rather open Savannah environments. As the landscape changed environments that which are quite difficult and dangerous to live in because there's lots of, um, dangerous predators around. So they're probably needing living larger group sizes. They're probably needing to cooperate more than others. They couldn't just escape up a tree, for instance. 'cause there are that not many trees around. So it need to work together both for fining food and defending against predators. That might have been one of the stimulants for language. Not to be communicating information, but to building, be building social bonds.

SM: But we've gotta think those earlier stages of the language, they probably didn't involve many words, let alone complex grammar. There was probably, you know, not that different from chimpanzee type grants and barks, but becoming mm-hmm. More direct to particular individuals becoming richer, more emotionally involved and so forth. So socializing is certainly important, but also just transmitting information about what's happening in the landscape, the site of a predator, the location of some ripe berries or some tubers or a carcass could be exploited. I. I mean, I'm sure passing on that factual

information was also been of selective value and helped push language that bit forward. So trying to find one particular reason I don't think is right. And I think if we look at language today, we can see how it's used for all sorts of purposes. I'm sure that was also the case right back in our early times.

EW: We've touched a few times on chimpanzees today, and our other APE relatives today can tell us about the origins of human language. And you have a really fascinating chapter about this, where you examine some of these research that has revealed the capacity or, uh, what their capacity might be for language on both, you know, anatomical and cognitive levels. And I was hoping you could just take me through a little bit of that research.

SM: I mean, they do just such fascinating experiments. [00:20:00] If we go back 30 years mm-hmm. We'd think that chimpanzees just bark and grunt, and these all just. Really emotional outbursts. But what Ologists have done is that they've, they've worked with wild chimpanzees because once you have them in zoos or in institutions, you, you can't really see their natural behavior communications. They work in the wild, but they make subtle manipulations of those wild settings. So, for instance, if they see a trail that chimpanzees will frequently use without gathering, gathering food, and so forth. They might put an artificial snake on the track and they might ensure that one chimpanzee sees that and then they'll be able to record its responses. It's vocal responses. Who does it call to? When does it call? Does it call to everybody? Or, or, or quite what? And they, they do the similar things with putting different types of food out and so forth. So gradually trying to control certain factors. Stimulate certain calls and gradually then piece together what those calls, not so much what they might mean, but the function that that, that they're playing.

SM: Another really fascinating example is orangutans and orangutans live with their, um, the mothers live with their infants for, for many years, and their big predator are tigers in the forest. So they've actually put people out in tiger costumes crawling through the forest. Orangutans see them and they listen to the response. And one of the amazing things is that orangutans sometimes don't respond immediately. They wait until the predator has passed and then they call. The idea of that is they, they're able to be aware of the situation, but control themselves. 'cause if you call immediately, you're just gonna attract the attention of the predator, but you need to call in a while. To warn your offspring and your, and the, the other female orangutan that there is danger about. So these experiments show how these barks and grunts and calls aren't just emotional out outbursts, the carefully controlled relating to the social and the ecological context.

EW: That experiment reveals what, what seems like a deliberate delay in communication. But how much can we really say about conscious intent there?

SM: We don't know whether the orangutans are actually consciously aware of what they're doing. We don't. We don't know that. I mean, we know that we would be consciously aware. We don't really know whether that is the case in orangutans or whether it's just something that's been selected. I suspect they are. You know, I suspect there's a lot more consciousness not only in these great apes, but many other animals than we're generally prepared to credit them with.

EW: Let's take a quick break here. We'll be back before you know it. Welcome back everyone. I'm here chatting with Professor Steven Mithen about his book The Language Puzzle. Let's get into some more questions. So along those lines, you discuss a concept in your book called displacement. So the ability to communicate about things that are not actually present. Yeah. We thought that this was something unique to humans, but turns out that it might not be.

SM: That's part of displacement. The other big area of displacement is being able to talk not just about the present, but about the future and the past. So I can talk about what happened to me yesterday, or I can talk about what happened to my family 50 years ago, or I can talk about the alternative distance, past equal act, talk about what I expect to happen in the future, and that that predicting the future is a really important element, you can think of how that would be an of enormous adaptive value to a hominin ancestors in terms of planning by imagining a different future, but not only imagining it in your mind, but be able to tell other people of what you imagine. And somebody else might say, well, I don't think it'd be about like this. I think if we do their, you know, we'll have more success hunting or gathering and so forth. So the displacement of time. It's really facilitated by language to be able to communicate that. Now, when did that occur? When did that happen? Is difficult to say, but being able to talk about the future and things that you cannot actually see at that time. Now we know we can do that even with quite young children. Talk about something that's not in their visual field. It's unlikely chimpanzees can manage, communicate, uh, things not in their current visual field, but that's clearly a pervasive element of language, something really important in C evolution.

EW: Going a little bit more into these experiments, studying present day, you know, our present day, REL eight relatives, what can that [00:25:00] tell us about the origins of language being more gestural or more vocal or, you know, what are some of the arguments for these.

SM: We do have to be slightly careful 'cause we've gotta remember that chimpanzees, they aren't our ancestor, they're a modern species. So this, the chimpanzee like communication has had the same length of evolutionary time as, as our modern, as has our modern language. But the, the, the difference between vocal and gest communication. Important. We can see that maybe with chimpanzees or gorillas, gestural is a really fo important form of communication as it remains with us today. And some anthropologists have argued that actually language evolved originally by gesture. By sound language and then quite late in the evolution is sort of switched over into a, a vocal form. You know, our vocal tracks really evolved for breathing and for eating, and they've been secondarily used for language. So they argued that GEs language lies at the origin. Now, I don't believe that the simple reason is, I think our vocal tracks are so superbly adapted now. To making such a wide range of vocalizations. You know, when we talk, we use such subtle manipulations of different muscles to be able to change the shape of our mouth, our, our larynx, to be able to create the different sounds. I don't think that's a late development. I think that's had millions of years of evolution and it must have been for vocal communication. So I think gesture's always been supporting it, but never driving the evolution of language.

EW: I'm wondering where hearing fits into this as well, uh, human hearing, how, how has that evolved in conjunction with our vocal tract or our, our language capacity?

SM: The invasion hearing, I, I think, must have been relatively more advanced than speaking in the early periods of our evolution, because as hunter gatherers that have been very attuned to listening to the sounds of nature, listening to the sounds of. Approaching predators or bird singing or leaves the wind and so forth. So listening carefully to nature. It is critical not just for human hunter gatherers, but for various apes and so forth. So there was always, I think, a very strong capacity there. We can see how that evolved by looking at some of these shapes of the ear bones, as I mentioned earlier, because we can use those to reconstruct the inner ear and what frequencies.

SM: They were susceptible to at some time in human evolution, probably around 500,000 years ago, a bit later. We can see how these change to become more sensible, to rather lower range of frequencies, which are, tend to be more that we have when spoken language rather than in nature itself. So we can make some estimates of how hearing might have evolved, but it's, it's as crucial to language of course. Just remember when I speak to you. If we're in the same room, my words are just little puffs of air and they come into your ears and your eardrums and convert them into electrical signals, which then your brain

decodes into concepts that in your brain. And if it's right, those concepts be the same ones that I've tried to communicate with you. Where do words exist? We're not really sure words exist, but the ear and the audio track is absolute critical aspect of. Language and you're right to raise it. 'cause it does often get neglected in people talking about the evolution language. The evolution hearing is as important as the evolution speaking.

EW: And it kind of brings me to the next question, which is, as we discussed, you know, the vocal origins of language would've just started out not with recognizable words, of course, with like discreet meanings necessarily. What would those early vocalizations have looked like or sounded like when they began to take on meaning? And then how was that meaning communicated? I guess iconic words is kind of where I'm going with this.

SM: We did really enter into the realms of speculation here, of course. Mm-hmm. But, mm-hmm. This question of what were the first words and how did words start, has been one of the biggest challenges in people thinking about and writing about language evolution? Well, ever since Plato, because Plato in the fifth century BC he, you know, in his dialogue, he was speculating about the origins of words and in the enlightenment period. Scholars such as heard, they really struggled to fight. Think what is the bridge between human words and animals barks and cries. They couldn't really find anything in the middle there.

SM: Now we do have something in the middle, which is what we call today, iconic words. These are words that don't have arbitrary meanings or not entirely arbitrary meanings, but they either [00:30:00] sound like or create a sense impression of what they refer to. So the obvious ones are on a matter appears. Like bang and quack and so forth. And you know, when I say these words, you don't have to know a meaning of them. You have an intuitive understanding of what they're referring to. So an idea came around that maybe these iconic words were the earliest type of words. Then others built on top of that research over the last decade or two has really confirmed that. 'Cause what is shown is that young children, when they're learning language, the majority of their first words they learn are indeed the iconic words. And as we talk to children. We tend to litter our language with iconic words rather than the arbitrary words. So, you know, would say rather than saying, look at this dog, we say, look at that woof, or something like that, we litter iconic words into our conversation with the children 'cause it facilitates their language learning.

SM: And we actually use iconic words, a huge amount of language without realizing it in English in many languages when we talk about small little things. Often quick moving. We often use short words and high in front valves like B

or flea or P. As I say, those, I'm making little small sides of my mouth and it's sort of mimicking the size of the object. Whereas you think about large, slow, heavy objects, we use words like. Enormous or rhinoceros or hippopotamus. Now I'm using these back valves, O's and u's, and by the size of my mouth, I'm generating a sense impression of what that image was like. So if we go back to babies, if we're in a room and I point and say, look at that balloon now, they'll intuitively grasp balloon because the word balloon creates that. Sense that frame that size in the mouth and it connects what they're seeing with the sound that's being made. So these are, these are iconic words. My guess is that iconic words did indeed provide a bridge between these sort of animal grunts and barks. Don't want to dismiss their complication, but nevertheless, they don't have meaning to words in modern language. Majority of which have arbitrary meanings. And in the middle of that, I think sits arbitrary words. And you know, by the time they get to about 13 or 14 arbitrary words take over. And that's because we just can't have enough iconic words to talk about all the different things we want to. But by that time, they've understood art words are labels for things. And the shared understandings. So that's, that's how they, that's how I think they emerge.

EW: Iconic words as a bridge is really crucial. And, and you mentioned in your book about the role that synesthesia may have played in their, these iconic words, sort of existing or, or coming to have meaning. And I was hoping you could talk a little bit more about the role that synesthesia may have played.

SM: You know, synesthesia is a, is this condition whereby our different senses are somehow connected. In some adults, it's found in quite an extreme form where the laws associate a particular word with a particular color or a particular, uh, a particular texture or so forth. It's a cross modal. Between their different sensory organs. That's really extreme form, but we all, and especially young children, probably have synesthesia in some sort of, some sort of mild form. Um, and it was, it was indeed suggested by, um, some psychologist a number of years ago that this may have facilitated the developed iconic words early in our ancestors. It may well be that as the brain was enlarging in our early ancestors such as Homer Hali, living about two and a half million years ago, that the level of synesthesia was to some extent, but larger than we have in our one mis day, and that facilitate this connection between sounds. And what can be seen or what can be felt, or what can be tasted. If that is the case, it would've been a big boost to sort of iconic words. And I, I think there's a very strong argument for that. Of course, it's really difficult to prove, and we do need some more research. About that low level synesthesia that I think isn't present in, in all of us today.

EW: So you mentioned iconic words as this being, this bridge between vocalizations and these vocalizations taking on meaning. Yes. And we also discussed. How babies learn iconic words first, how [00:35:00] much does or doesn't the phrase Ontogeny recapitulates phylogeny apply in this case? Like how much can we deduce about language origins from babies learning language?

SM: Yeah. Well, I mean that's a, that's a huge question and I, I'm not sure on that, the answer myself. We've gotta be very cautious of this because, 'cause babies are growing up in a language environment, not only language environment, but ones where people, particularly their mothers and their fathers and their siblings are talking to them in a way that is facilitating the acquisition of language. When we talk to babies, we use. What's sometimes called motherese or infant directed speech, we exaggerate the contours of language, the length of vowels, and so forth, and that helps children grasp words where they start and where they stop and what they might mean. Of course, early humans are evolving in a language absent environment.

SM: They're building it themselves. So they're very different contexts, but nevertheless, both, uh, in evolution and in development, we're dealing somehow with the acquisition of language. So I think we can see some parallels. I. I'd be really cautious about saying there's a direct recapitulation of phylogeny happening here. I don't think there is. I think both our hominin ancestors and infants are just solving a problem of how do we communicate vocally and to some extent, similar solutions are found. The speed at which. Babies acquire language. It's just phenomenal. You know, the fact that you can take a baby and put it in any language community and it will acquire the language so that people are speaking to it however different that is, it's just astonishing. And there's been some remarkable research in psychology whereby we now understand how babies are beginning to identify words and grasp the meaning of them. It's a fascinating area of linguistics, supportive of evolutionary ideas, but perhaps not giving a solution to how language involved.

EW: It's, I mean, it's incredible just to go from like this baby who then, you know, learns a few words and then suddenly is just, yeah. Talking nonstop is, is amazing to, to watch and experience. And we could talk about. The language learning in in babies for the rest of this time, I'm sure. But I wanna fast forward us now to the point where humans have language or languages. Yeah. And ask what drives the evolution of a language once it's in existence. Like why, how do words change or how are they invented?

SM: I mentioned earlier that there's over 7,000 different languages in the world today, and they've all got different vocabularies and different grammars. But they share similarities by having these, having both iconic and arbitrary words by having a grammatical structures our early human ancestors, living between the time of the commons of the chimpanzees and modern humans. We evolved around 150,000 years ago, may have had language but not fully modern language. So I'd argue that one grade of our ancestors, homo Hali, probably used iconic sounds within their Apelike vocalizations. By the time we got to Homoerectus, they were probably using the first iconic words, but probably didn't have lots of arbitrary words at that time.

SM: By the time we moved on to Homo Heidelberg and then the Neandertals. They've probably got words which are iconic and which are arbitrary. They've probably got some grammatical structures, but when you get onto modern humans, there's probably additional components of language being added there. So I think they're all languages, but languages of different type to modern human language and those languages were changing partly by biological evolution. Further evolutions of the vocal tract of brain, connections of the oral tract, but also by cultural transmission, which is the way our language has changed today. Language are constantly evolving. Words change their meanings, they change how they're pronounced. We invent new words, and this is done partly. Without any intention and partly done sometimes intentionally because our circumstances change and we need new, new different types of words. So language is something that's constantly, constantly evolving and changing by conversations like we're having today. You might hear me pronounce a word in a particular way or use a word you haven't heard before, or use a word with a meaning that you like but hadn't particularly been aware of. Then you might go and use that to somebody else and so forth. And gradually those which work [00:40:00] well get adopted by a language community. Those which are no longer significant just get lost. So language is continually, continually changing.

EW: Is the rate at which a language changes affected by things like war or conflict or upheaval in some way

SM: times of. I suppose catastrophe can change language because you can have large numbers of particular speakers wiped out leaving the population of maybe predominantly younger people or one gender rather than another, or one classroom, another, and of course they would have a vocabulary, uh, maybe in dialects, which are different to. The, the larger previous population, times of times of warfare can do the same. Times of political change can also have a big impact on language when political leaders want to impose one language over

those of many minority languages. So there's all events like plagues. Warfare, political interactions that can push the languages of the community in one direction with another. And they sit on top of this low level, constant gradually evolution of language change. And of course, you know, invention of technology has a huge impact. If we think about what changes have happened in our lifetimes. They're probably going to be in the range of digital communication. I mean, Erin, if I talk to you about the cloud now, you know, I'm not talking about clouds in the sky. I'm talking about some sort of strange digital storage mechanism. I might have talked to you, what, five years ago, 10 years ago, about a mouse and not an animal, but do you still use a mouse? Maybe you still do. I still do. On, on your, okay. Yeah. Um, or I say, have you got your tablet? I don't mean your tablet, your medicine, I mean your tablet, which is your thing.

SM: So this is a lovely example of how technical change has changed the meaning of words and what we've done. We've just borrowed existing words that seem suitable, that people understand and so quickly they've become part of everyday vocabulary and they could, they still sit with those other meanings, but we just draw in the context in which they're said to know what meaning is meanings being used?

EW: Just to kind of take a step back and, and consider, I guess all of these pieces together, uh, and borrowing from Stephen j Gould's, you know, thought experiment of replaying the tape of life. Yeah. If we rewind evolutionary time, at what point in human evolution does language become inevitable?

SM: I think that the point in time when language became inevitable was probably about. 2 million years ago when we began walking on two legs, the evolution of bipedalism rather than going round on all floors most of the time, because that changed our whole anatomy. It it, it gave us, it freed our hands, it changed the way we breathe. It changed the shape of the vocal tract. It's ultimately allowed the brain to grow in size. And I think once that's been released, a mild selection pressures. LED evolution language. If you could run human evolution again, you might not have the same selective pressures, you might have different ones. Language might not take the same form as today, but I think you would've ended up with a complex form of vocal communication.

SM: And the reason for that is it's just so bloody useful, isn't it? I mean, you know, uh, and, and you can see its value because after about a hundred thousand years ago. Humanity was just transformed and culture transformed. 'cause I think that's when the final stage of the modern language evolved. And the key to that, I think, is our ability to use metaphor. Metaphor connects ideas together in

the mind. And it allows us to think creatively, to hold abstract concepts. And I think it's no should not be surprising that after that had evolved at about a hundred thousand years ago, as soon as the ice H came to an end. Prevented agriculture and farming. And from farming, we went to towns and cities and civilizations and empires, and within just 10,000 years to the present day. And I think the ultimate cause of that is an evolution of fully modern language. I think it lies behind everything in the modern world.

EW: Well, now that we've, you know, looked back at the origins of language, I would love to turn and, and look to the future. You know, knowing what we know about the origins of language, about how it has evolved over written history. What can we hypothesize about the future and what, for instance, English might look like a hundred years from now, and at what point does it become unrecognizable to us humans in 2025 today?

SM: Well, that's another really impossible question to answer, isn't it? As you, as you, jolly well know, um, what, what I [00:45:00] think we can say is, is going to be continually evolving. I think English will get simpler, if you like, I think, or lose various of its grammatical constructions today. We can see it happening. People don't use apostrophes properly anymore, do they when they write and et cetera. Okay? Why is it becoming simpler? Because it's becoming a global language. Because it got more and more second learners to it. More people need to learn it as their, as a first language or second language or third language. So it's developing even more learnability than it has at the moment. So I think Lang the grammatical structures of. English are going to become even simpler as we move, as we move forward. Of course, we did see a transformation of language already in the past when writing was invented 5,000 years ago, and we're seeing another transformation of it now with the way we write in social media, that's changing not only written text, but I think it's also influ influencing, um, spoken language as well. And in the past, the people who have tended to make the most innovations in language seems to be adolescent women. They're, they've often been the main innovators in language change.

SM: As far as we can see, and I suspect that's going to continually happen in the world quite where it's gonna go. We don't know. I think what we will know is that language will continue to be the most wonderful, fabulous thing we have, but also the most dangerous because we talk about using language, we use it to make friends, to tell stories and so forth. But we also know the danger of language in especially in the world we're living in at the moment with peace negotiations starting or stopping in Gaza or in Russia. Those particular words that are said and the ambiguity of words and so forth, which sometimes are so

valuable, sometimes are so dangerous. So I think we know that our future lives will depend on how language is used and how it will develop.

EW: Profound and, and I completely agree. And I just wanna thank you so much for taking the time to chat with me today. This was an absolutely eye-opening conversation, so enlightening. So thank you.

SM: Well, I'm really delighted to have the interview to join your podcast. I hope this one doesn't kill you or anybody else. It's been great fun talking to you, Erin.

EW: A huge thank you again to Professor Steven Mithen for taking the time to chat with me. I can already tell that our conversation and this book will stick with me for quite a while. If you enjoyed today's episode and would like to learn more, check out our website. This podcast will kill you.com, where I'll post a link to where you can find The Language Puzzle: Piecing Together the 6-Million-Year Story of How Words Evolved, as well as the link to Steven's website where you can find his other fascinating work. And don't forget, you can check out our website for all sorts of other cool things, including but not limited to transcripts, quarantini and placeborita recipes show notes and references for all of our episodes. Links to merch our bookshop.org affiliate account, our goodreads list, our firsthand account form and music by Bloodmobile. Speaking of which, thank you to Blood Mobile for providing the music for this episode and all of our episodes. Thank you to Lianna Squillache and Tom Breyfogle for our audio mixing. And thanks to you listeners for listening. I hope you liked this episode and our loving being part of the TPWKY Book Club, a special thank you as always to our fantastic patrons. We appreciate your support so very much. Well, until next time, keep washing those hands.