How Language Began

The Story of Humanity's Greatest Invention

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Language is not an instinct, based on genetically transmitted knowledge coded in a discrete cortical 'language organ'. Instead it is a learned skill … that is distributed over many parts of the human brain.

Philip Lieberman

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Preface

AROUND 1920 A RATTLESNAKE killed my great-grandfather outside of Lubbock, Texas. Walking home from church with his family across a cotton field, Great-grandfather Dungan was telling his children to watch out for snakes in the field when he was suddenly struck in the thigh. His daughter, Clara Belle, my grandmother, told me that he suffered for three days, crippled in pain and screaming, until he finally expired in his bedroom at the back of the house.

One did not have to be at the scene of the incident to know that, because it was a rattlesnake, it must have 'warned' my great-grandfather before striking. But, considering the outcome, there must have been a communication failure between Papa Dungan and the snake. My grandmother saw the snake bite her father and she talked about the event a great deal during my childhood. She often remembered the moments when the snake was 'warning' her father, as if the beast would use actual words if it only could. However, people who know that rattlesnakes communicate often confuse their tail shaking with language, leading them to anthropomorphise and evoke human terms, such as saying they 'tell' threatening creatures 'to stay away' by shaking the keratin-formed, interlocking, hollow parts at the end of their tail to produce a loud rattle. Though that action is not technically language, the snake's rattling carries important information nonetheless. My great-grandfather paid a heavy price for failing to heed that message.

Rattlesnakes aren't the only animal communicators, of course. In fact, all animals communicate, receiving and transmitting information to other animals, whether of their own or different species. As I will later explain, however, we should resist labelling the rattle of a snake 'language'. A rattlesnake's repertoire is splendidly effective, but for severely limited purposes. No snake can tell you what it wants to

do tomorrow or how it feels about the weather. Messages like those require language, the most advanced form of communication earth has yet produced.

The story of how humans came to have language is a mostly untold one, full of invention and discovery, and the conclusions that I come to through that story have a long pedigree in the sciences related to language evolution – anthropology, linguistics, cognitive science, palaeoneurology, archaeology, biology, neuroscience and primatology. Like any scientist, however, my interpretations are informed by my background, which in this case are my forty years of field research on languages and cultures of North, Central and South America, especially with hunter-gatherers of the Brazilian Amazon. As in my latest monograph on the intersection of psychology and culture, *Dark Matter of the Mind: The Culturally Articulated Unconscious*, I deny here that language is an instinct of any kind, as I also deny that it is innate, or inborn.

As far back as the work of psychologist Kurt Goldstein in the early twentieth century, researchers have denied that there are language-exclusive cognitive disorders. The absence of such disorders would seem to suggest that language emerges from the individual and not merely from language-specific regions of the brain. And this in turn supports the claim that language is not a relatively recent development, say 50–100,000 years old, possessed exclusively by *Homo sapiens*. My research suggests that language began with *Homo erectus* more than one million years ago, and has existed for 60,000 generations.

As such, the hero of this story is *Homo erectus*, upright man, the most intelligent creature that had ever existed until that time. *Erectus* was the pioneer of language, culture, human migration and adventure. Around three-quarters of a million years before *Homo erectus* transmogrified into *Homo sapiens*, their communities sailed almost two hundred miles (320 kilometres) across open ocean and walked nearly the entire world.

Erectus communities invented symbols and language, the sort that wouldn't seem out of place today. Although their languages differed from modern languages in the quantity of their grammatical tools, they were human languages. Of course, as generations came and went, *Homo sapiens* unsurprisingly improved on what *erectus* had done, but

there are languages still spoken today that are reminiscent of the first ever spoken, and they are not inferior to other modern languages.

The Latin word *Homo* means 'man'. Therefore, any creature of the *Homo* genus is a human being. In two-word Latin biological nomenclature, a genus is the broader classification of which a species is a variant. Thus, *Homo erectus* describes a species – *erectus*, 'standing' – that is a member of the human, *Homo*, genus. *Homo erectus* thus means 'standing man'. This is the first species of humans. *Homo neanderthalensis* means 'Neander Valley man', based on the fact that its fossils were first discovered in the Neander Valley of Germany. *Homo sapiens* means 'wise man', and suggests, erroneously as we see, that modern humans (we are all *Homo sapiens*) are the only wise or intelligent humans. We are almost certainly the smartest. But we are not the only smart humans who ever lived.

Erectus also invented the other pillar of human cognition: culture. Who we are today was partially forged by the intelligence, travels, trials and strength of *Homo erectus*. This is worth stating because too many *sapiens* fail to reflect on the importance of earlier humans to who we are today.

My interest in language and its evolution is personal. All of my life, from my earliest years growing up on the Mexico–California border, languages and cultures have fascinated me. And how could they not? Incredibly, all languages share at least some grammatical characteristics, whether it be words for things, words for events or conventions for ordering and structuring sounds and words, or organising paragraphs, stories and conversations. But languages are perhaps even more unlike one another than alike. However easy or difficult these differences may be to discover, they are always there. Today, there is no universal human language, whether or not there was at some period in the remote past. And there is no mental template for grammar that humans are born with. Languages' similarities are not rooted in a special genetics for language. They follow from culture and common information-processing solutions and have their own individual evolutionary stories.

But each language satisfies the human need to communicate. While many people in today's world are tempted to spend more time on social media than perhaps they should, it is the pull of linguistic intercourse

that is mainly driving them there. No matter how busy some are, it is hard for them to avoid entering into some 'conversation' on the screen in front of them to opine on issues about which they often know little and care less. Whether via water cooler conversations, or absorbing information from television, or discussing plays, or reading or writing novels, talking and writing bind humans ever more tightly into a community.

As a result, language – not communication – is the dividing line between humans and other animals. Yet it is impossible to understand language without understanding something of its origin and evolution. For centuries people have offered ideas about where and when language originated. They have wondered which of the many species of the genus *Homo* was the first to have language. And they have asked what language sounded like at the aurora of human history. The answer is easy. Language gradually emerged from a culture, formed by people who communicated with one another via human brains. *Language is the handmaiden of culture*.

How Language Began offers a unique, wide-ranging story of the evolutionary history of language as a human invention – from the emergence of our species to the more than 7,000 languages spoken today. Their complexity and range was invented by our species, later developing into local variants, each new linguistic community altering language to fit its own culture. To be sure, the first languages were also constrained by human neurophysiology and the human vocal apparatus. And all languages came about gradually. Language did not begin with gestures, nor with singing, nor with imitations of animal sounds. Languages began via culturally invented symbols. Humans ordered these initial symbols and formed larger symbols from them. At the same time symbols were accompanied by gestures and pitch modulation of the voice: intonation. Gestures and intonation function together and separately to draw attention to, to render more salient perceptually, some of the symbols in an utterance – the most newsworthy for the hearer. This system of symbols, ordering, gestures and intonation emerged synergistically, each component adding something that led to something more intricate, more effective. No single one of these components was part of language until they all were – the whole giving purpose to the parts – as far back as nearly two million years

ago. Language was culturally invented and shaped and made possible by our large, dense brains.[1] This combination of brain and culture explains why only humans have ever been able to talk.

Other authors have labelled language an 'invention', only to qualify that reasonable assessment by adding 'but it's not *really* an invention. That is a metaphor.' But the use of the word 'invention' here is not a metaphor. It means what it says – human communities *created* symbols, grammar and language where there had been none before.

But what is an invention? It is a *creation of culture*. Edison alone did not invent the light bulb; he needed Franklin's work in electricity nearly 200 years before him. No one person invents anything. Everyone is part of a culture and part of each other's creativity, ideas, earlier attempts and the general world of knowledge in which they live. Every invention is built up over time, bit by bit. Language is no exception.

Introduction

In the beginning was the Word.

John 1:1

No, it wasn't.

Dan Everett

IT WAS A SULTRY MORNING IN 1991, along the Kitiá river in the Amazonian rainforest of Brazil, some 200 miles (320 kilometres) in a single-engined plane from the nearest town. I found myself fitting headphone mics on two slender, weather-hardened men, Sabatão (sa-ba-TOWN) and Bidu (bee-DOO). This time of day would usually find them in the jungle, armed with eight-foot blowguns and quivers of poisoned darts, hunting for peccary, deer, monkey, or other game indigenous to their Eden. But today they were going to talk to each other while I bothered with recorder controls and sound levels.

Before we began I explained to them, again, in a mix of their language, Banawá (ba-na-WA) and Portuguese, what I wanted. 'Talk to each other. About anything. Tell each other stories. Talk about the Americans and the Brazilians who visit the village. Whatever you want.' I had coaxed and paid them to be here because I was after the holy grail of the linguistics field researcher – natural conversation (interactive, spontaneous communication involving more than one person). I knew from my past failures that natural conversations were nearly impossible to record. This is because the presence of a field researcher with recording equipment affects the perception of the task and contaminates the result so severely that one usually gets only stilted, unnatural exchanges that no native speaker would accept as a real conversation. (Imagine if

someone sat you down with a friend, fitted you with a headset mic and then cued you, 'Converse!')

But today, as I tested the sound quality of the recording I was making, I could barely contain my excitement. They began like this:

Sabatão: Bidu, Bidu! Let talk today.
Bidu: *Mmm.*
S: Let talk in our language.
B: *Mmm.*
S: Daniel likes our language very much.
B: *Yes, I know.*
S: I will talk. You can then tell a story about that jaguar.
B: *Yes.*
S: Let's remember how things were a long time ago.
B: *Yes. I remember.*
S: A long time ago the whites arrived. A long time ago the whites arrived in our village.
B: *Them I know.*
S: They found us. We will work with them.
B: *Yes. Them I know.*

Their conversation glided from topic to topic naturally for the better part of an hour.

Though I was several thousand miles from home, sweating profusely, swatting away wasps and blood-sucking flies, I nearly teared up after Sabatão and Bidu finished, forty-five minutes later. I thanked them enthusiastically for this verbal treasure they had provided me with. They smiled and left to go hunting with their blowguns and poisoned darts. I continued alone, transcribing (writing down every nuance phonetically), translating and analysing the recording. After a couple of days of hard work to make the data 'presentable', I turned over the recordings, my notes and the bulk of the remaining work of analysis to a graduate student who had accompanied me to the Amazon from the University of Manchester in England.

At the end of the day our research team – myself and three students – enjoyed an evening meal of beans, rice and peccary meat I had purchased from the Banawás. We sat around after the meal, discussing

the jungle heat and bugs, the likes of which we'd never seen before, but especially we conversed about the recorded conversation of Bidu and Sabatão and how grateful we were to them. Conversations within conversations. Conversations about conversations.

Following the blink-of-an-eye Amazonian sunset, the Banawás came to visit, as is their custom. The four of us made Kool-Aid and coffee and opened a package of sweet biscuits for them. We first greeted the Banawá women. The female students handled most of the serving and greeting of the women as is culturally appropriate among the Banawás, who practise rigorous segregation of the sexes. Soon the men were allowed to sit down and we served more coffee, Kool-Aid and sweet biscuits. As we ate and drank, we chatted with the men, mainly answering their questions about our families and homes. Just like people everywhere do on a daily basis, we and the Banawás were building relationships and friendships through conversation.

Natural conversations of this sort are important to linguists, psychologists, sociologists, anthropologists and philosophers because they embody the complex, integrated whole of language in a way that no other manifestation of language does. Conversations are the apex of linguistic studies and sources of insight particularly because they are potentially open-ended in meaning and form. They are also crucial to understanding the nature of language because of their 'underdeterminacy' – saying less than what is intended to be communicated and leaving the unspoken assumptions to be figured out by the hearer in some way. Underdeterminacy has always been part of language.

As an example of underdeterminacy, look at the second line of the conversation between Sabatão and Bidu. Sabatão says to Bidu, 'Let talk in *our language*.' This is strange if one takes it literally, because *they are already speaking in their language*. In fact, these men would be hard pressed to carry on a natural conversation in Portuguese, because their knowledge of it is rudimentary, limited principally to bartering. Sabatão's words presume something unstated. Sabatão is using these words to indirectly let *me* know that they will not use any Portuguese to converse *because they know that I am trying to understand how they converse in their language* and *because they want to help me*. None of this is spoken. Though underdetermined by the words, it is implicit in the context.

Likewise, in the line 'Let's remember how things were a long time ago' there is shared knowledge of the general range of things they are trying to remember. What is up for grabs here? Rituals? Hunting? Relationships with other peoples? How long ago? Before the Americans came? Before the Brazilians came? A hundred generations? Both Bidu and Sabatão (or indeed any other Banawá) know what is being talked about, but this is not clear initially to someone from another culture.

Sabatão and Bidu are two of the eighty or so remaining speakers of Banawá, a language that has already helped the scientific community learn a great deal about human language, cognition, the Amazon and culture. Specifically, they have taught us about unusual sound structures and grammar, the ingredients and process for manufacturing poison for darts and arrows, their classification of Amazonian flora and fauna and their connections linguistically to other Amazonians. Such lessons naturally follow from working out the knowledge structures, values, linguistics and social organisation of different groups who, like the Banawás, have spent millennia mastering life in a particular niche.

Any community – whether it be the Banawás, the French, the Chinese, or Botswanans – uses language to build social ties between members of their community and others. Indeed, our species has been conversing for a very long time. All languages on earth trace their underdetermined, socially bonding, grammar-constrained, meaning-motivated expressions of thought back to early hominins, to *Homo erectus* and perhaps even earlier. Based on the evidence of *Homo erectus* culture, such as their tools, houses, village spatial organisation and ocean travel to imagined lands beyond the horizon, the genus *Homo* has been talking for some 60,000 generations – quite possibly more than one and a half million years. By now one would expect our species, after more than a thousand thousand years of practice, to be very good at language. And we would also expect the languages we have all developed over time to better fit our cognitive and perceptual limitations, auditory range, vocal apparatus and brain structures. Underdeterminacy means that every utterance in every conversation and every line in every novel and each sentence of any speech contains 'blank spots' – unspoken, assumed knowledge, values, roles and emotions – underdetermined content that I label 'dark matter'. Language can never be understood entirely without a shared, internalised set of

values, social structures and knowledge relationships. In these shared cultural and psychological components, language filters what is communicated, guiding a hearer's interpretations of what another is saying. People use the context and cultures in which they hear language to interpret it. They also use gestures and intonation, in order to interpret the full meaning of what is being communicated.

Like all humans, the first *Homo* species to begin the long arduous process of constructing a language from scratch almost certainly never said entirely what was on their minds. That would violate basic design features of language. At the same time, these primordial hominins would not have simply made random sounds or gestures. Instead, they would have used means to communicate that they believed others would understand. And they also thought their hearers could 'fill in the gaps', and connect their knowledge of their culture and the world to interpret what was uttered.

These are some of the reasons why the origins of human language cannot be effectively discussed unless conversation is placed at the top of the list of things to understand. Every aspect of human language has evolved, as have components of the human brain and body, to engage in conversation and social life. Language did not fully begin when the first hominid uttered the first word or sentence. It began in earnest only with the first conversation, which is both the source and the goal of language. Indeed, language changes lives. It builds society, expresses our highest aspirations, our basest thoughts, our emotions and our philosophies of life. But all language is ultimately at the service of human interaction. Other components of language – things like grammar and stories – are secondary to conversation.

This point raises an interesting question about language evolution, namely who spoke first? Over the past two centuries a plethora of ancestors for humans have been proposed, from South Africa, Java and Beijing, to the Neanderthal Valley and Olduvai Gorge. At the same time, researchers have proposed several novel hominin species, leading to a confusing evolutionary mosaic. To avoid getting caught up in a morass of uncertain proposals, only three language-possessing species need to be discussed – *Homo erectus*, *Homo neanderthalensis* and *Homo sapiens*.

Few linguists claim that *Homo erectus* had language. Many, in fact,

deny this. There is currently no consensus on when the first humans spoke. But there does seem to be some modern consensus on human evolution, the methods used and an overview of the evolution of our species' physical and cognitive abilities. In *The Descent of Man*, Charles Darwin suggested that Africa might be the birthplace of humans because it is also the location of most apes. He reasoned (correctly) that humans and apes probably are closely related, sharing a common ancestor. Darwin wrote these prescient remarks prior to the major discoveries of early hominins (hominin refers to the genus *Homo* and their upright ancestors, such as *Australopithecus afarensis*). Another group of relatives, the hominids, are the great apes. This group includes humans, orang-utans, gorillas, chimpanzees, bonobos and their common ancestor. The cast in the story of human evolution includes the offshoots of *Homo erectus*, up to modern humans. To understand the relationships between some of these different species and whether or not they spoke, one must learn what is known about them.

Part of the controversy of human origins is the number of species of *Homo* that existed, but it is still necessary to understand the potential cognitive abilities of all hominins (based on brain size, tool kits and travel) before moving on to the significance of hominin migration for the evolution of human language. One can focus on physiology or culture or both, yet some of the most interesting evidence comes from culture.

Symbols (the association of largely arbitrary forms with specific meanings, such as using the sounds in the word 'dog' to mean *canine*) were the invention that put humans on the road to language. And for this reason we must understand not only how they came about, but also how they were adopted by entire communities and how they were organised. One proposal I discard is arguably the most influential explanation of the origin of human language of all time. This is the idea that language resulted from a single genetic mutation some 50–100,000 years ago. This mutation supposedly enabled *Homo sapiens* to build complex sentences. This is the set of ideas known as *universal grammar*. But a very different hypothesis emerges from a careful examination of the evidence for the biological and cultural evolution of our species, namely the *sign progression* theory of language origin. This phrase means simply that language emerges gradually from indexes

(items that represent things they are physically connected to, such as a footprint to an animal) to icons (things that physically resemble the things they are used to represent, such as a portrait for the real person) and finally by creating symbols (conventional ways of representing meaning that are largely arbitrary).

Eventually, these symbols are combined with others to produce grammar, building complex symbols out of simple ones. This sign progression eventually reaches a point in language's evolution in which gestures and intonation are integrated with grammar and meaning to form a full human language. This integration transmits and highlights the information that the speaker is telling the hearer about. It represents a crucial, though often ignored, step in the origin of language.

Because the evolution of language is such a hard problem, the earliest efforts to solve it predictably began rather badly. In place of data and knowledge, accounts relied on speculation. One popular idea was that all languages began with Hebrew, since it was believed that this was the language of God. Like this Hebrew-first speculation, many ideas were abandoned, although there were others that included kernels of good ideas. These have led, however circuitously, to the present understanding of language origins.

But a serious deficiency traced its way through all of these early efforts and a lack of evidence, in conjunction with an abundance of speculation, irritated many scientists. So in 1866 the Paris Linguistics Society declared that it would no longer accept papers about language origins.

The good news is that the ban has now been lifted. Contemporary work is somewhat less speculative and occasionally more firmly grounded in hard evidence than the work of the nineteenth and twentieth centuries. In the twenty-first century, in spite of the difficulties, scientists have finally managed to put together enough of the extremely small pieces of the language evolution puzzle to give a reasonable idea of how human languages came about.

Still, one of the greatest mysteries left to solve regarding the origin of language, as many have observed, is the 'language gap'. There is a wide and deep linguistic chasm between humans and all other species. Communication systems of the animal kingdom are unlike human language. Only human languages have symbols and only human

languages are significantly compositional, breaking down utterances into smaller meaningful parts, such as stories into paragraphs, paragraphs into sentences, sentences into phrases and phrases into words. Each smaller unit contributes to the meaning of the larger unit of which it is a part. For some, this language gap exists simply because humans are a special creature unlike any other. Others claim that the distinctiveness of human language was designed by God.

More likely, the gap was formed by baby steps, by homeopathic changes spurred by culture. Yes, human languages are dramatically different from the communication systems of other animals, but the cognitive and cultural steps to get beyond the 'language threshold' were smaller than many seem to think. The evidence shows that there was no 'sudden leap' to the uniquely human features of language, but that our predecessor species in the genus *Homo* and earlier, perhaps among the australopithecines, slowly but surely progressed until humans achieved language. This slow march taken by early hominins resulted eventually in a yawning evolutionary chasm between human language and other animal communication. Eventually, *Homo* species developed social complexity, culture and physiological and neurological advantages over all other creatures.

Human language thus begins humbly, as a communication system among early hominids not unlike the communication systems of many other animals, but more effective than a rattlesnake's.

What if all eighty remaining speakers of Banawá died out suddenly and their bones were discovered only 100,000 years hence? Forgetting for now the fact that linguists have published grammars, dictionaries and other studies of the Banawá language, would their material culture leave any evidence that they were capable of language and symbolic reasoning? Arguably it would leave even less evidence of language than has been found for *neanderthalensis* or *erectus*. Banawá art (such as necklaces, basket designs and carvings) and their tools (including bows, arrows, blowguns, darts, poison and baskets) are biodegradable. So their material culture would disappear without a trace in much less than the 800,000 to 1,500,000 years that have passed since the appearance of the earliest cultures. Of course, it might be determined from soil usage that they had villages of a certain size, huts and so on, but it would be as difficult to extrapolate from the remnants of their artefacts

that they had language, as it is to claim that many ancient hunter-gatherer groups did or did not have language. It is known that current populations of Amazonians have fully developed human languages and rich cultures, so care must be taken not to conclude prematurely that the absence of evidence about language or culture in the prehistoric record indicates that ancient human populations lacked these essential cognitive attributes. In fact, when we look closely, there is evidence that the earliest species of *Homo* did in fact have culture and did speak.

The solution to the mystery of human language origins begins with an examination of the nature and evolution of the only surviving linguistic species, *Homo sapiens*, or, as author Tom Wolfe puts it, *Homo loquax*: 'speaking man'. There are several unique perspectives that mark the path of the evolution of language.

First, human language emerges from the much larger phenomenon of animal communication. Communication is nothing more than the (usually intentional) transference of information from one entity to another, whether this be the pheromonal communication of ants to other ants, the calls of vervets, the tail positions and movements of dogs, the fables of Aesop, or the writing and reading of books. Language is much more than information transfer, though.

The second perspective on the evolution of language derives from an examination from both the biological and cultural vantage points. How did the brain, the vocal apparatus, movements of the hands and the rest of the human body, in conjunction with culture, affect and facilitate language evolution? Too many accounts of language evolution focus on one or the other of these, the biological vs the cultural, to the exclusion of the others.

A final, and necessary, perspective may strike some as curious. It is to look at language evolution as a linguistic field researcher would. That perspective leads to two fundamental questions: how similar are the human languages that are spoken today and what does the diversity of modern languages reveal about the first human languages? These perspectives offer a useful vision of evolutionary milestones that mark the path of the first language of *Homo* species.

There are still additional questions to answer. Are gestures crucial to human languages? Yes, they are. Is a vocal apparatus identical to that of modern humans necessary for human languages? No. Are complex

grammatical structures required for human languages? No, but they are found in many modern languages for a variety of reasons. Do some societies communicate less or use linguistic communication less than others? It seems so. *Erectus* might have been in possession of language yet nevertheless valued taciturnity.