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In Search of the First Language

ANNOUNCER: Tonight on Nova, for a stranger in a foreign land, language can be an imposing barrier. But there are surprising similarities among the languages of the world. Could it be that at one time, long ago, we all spoke the same language?

JAMES MATISOFF, University of California, Berkeley: It's very nice to think about the days before Babel, when everybody spoke exactly the same way.

ANNOUNCER: Tantalizing new clues are challenging scientists "In Search of the First Language."
PETER THOMAS, Narrator: [voice-over] There are more than 5,000 languages spoken across the face of the Earth. Could all these languages ever be traced back to a common starting point? Was there a time when the people of the world spoke one tongue? This notion is vividly brought to life in the Old Testament story of Babel. IT hearkens back to a primeval time when the people of the Earth were all of one language and of one speech. According the biblical legend, the people of Babylon started to build a tower reaching up to heaven. Their ambition so offended God that he shattered the unity of their language, creating a confusion of incomprehensible tongues. Forever after, the tower was called Babel, from the Hebrew word balbail (-sp?), meaning to confuse.

This legend has inspired countless works of art, differing interpretations of that cataclysmic event. Like many myths, perhaps there is a germ of truth in the Babel story. Did a mother tongue ever exist? Can we find it? Clues can be found by studying the world's great language families, such as Indo-European, the family that includes English.

MERRITT RUGLEN, Linguist: The branches of this tree can represent different language families. The leaves on the branches, if we had leaves today, would represent different languages. And by tracing these branches back, one can arrive at larger branches, such as Indo-European, and by tracing the Indo-European branch back, one arrives at even larger branches. Eventually, we believe, that you arrive at the main trunk of this tree, into which all of the language or from which all of the language families have derived.

NARRATOR: [voice-over] There re some obvious connections among languages. Take Arabic and Hebrew for example. Listen to how people count in each language. That was Arabic. Here's the Hebrew. Some numbers sound almost identical.

But with other languages, it's not always so easy to spot the connections. Radio Sunrise serves an ethnically divers west London community, including Punjabi speakers living in the midst of an English suburb. What could these two languages -- Punjabi and English -- have in common? In fact, English and Punjabi, as well as other languages of northern India, like Hindi and Gujarati, are related, something discovered by chance 200 years ago by a multilingual English Lawyer, Sir William Jones.

COLIN RENFREW, University of Cambridge: He was a judge who went out to India in 1783, but he studied languages, Oriental languages, before he went, and when he got to India he became very interested and learned Sanskrit, which is the language of ancient India, which was first written about 500 A.D. And the he realized, he made this great discovery, that Sanskrit resembles in some way, has relationships with Greek and Latin and other languages, and he gave a very famous discourse in which he said that these were sprung were from some common source.

NARRATOR: [voice-over] Certain similarities are striking. Take the numbers again, for example. Here are two, three, seven and ten in English, Latin, Greek and Sanskrit. The three are alike in all the languages, but linguists are interested in discovering regular patterns, not isolated resemblances, so here T in English often appears as D in the other languages, and H in Greek appears as s in English, Latin and Sanskrit. By finding patterns like these, different languages can be grouped together as members of a language family.

DON RINGE, JR., University of Pennsylvania: The question is, how can you tell that the languages you're looking at reflect a single, original language and, therefore, form a family? The only way you can do that is by finding systematic similarities between these languages in every area of their grammar, similarities in their sounds, similarities in their inflections, similarities in the syntax of the language, and so forth. And the similarities have to be very precise, and they have to be interlocking for the assertion that these languages form a family, to be believable. You take a look at English ten and it shows up in Hindi as das, and you see the same pattern emerging, You've got an initial T in English, and an initial D in Hindi. When you find that the word two, the numeral in English, shows up in Hindi as do, and you've got, once again, an initial T in English and an initial D in Hindi, you begin to think that perhaps this is not an accident.

NARRATOR: [voice-over] Using this comparative method, linguists have been able to establish the connections among a group of languages which stretch from Iceland to India. This group of about 100 languages is called the Indo-European family of languages. Each of these languages can be traced to one of 10 individual branches, represented here by distinct colors. The lines which do not extend all the way are the languages which have gone extinct.

The subgroups, or daughter families, that survive today are Balto-Slavic, Germanic, Celtic, Italic, also Albanian, Hellenic, Armenian, and finally, Indo Iranian. By looking closely at the Germanic family, we can see how it has evolved over time into different languages, until we reach the ones we recognize today, such as Swedish, Danish, English and Dutch. By studying all the languages in this wide-ranging group, linguists have been able to reconstruct a hypothetical ancestral tongue called Proto-Indo-European, believed to have been spoken 5,000 to 6,000 years ago.

JAMES MATISOFF, University of California, Berkeley: What historical linguists do, the task they set themselves, is to look at the current state of the language, try and find other languages that are related to it, that descend from the same ancestor, and by this act of comparison try and trace back, through time, what earlier stages of the language might have been like, what the words used to mean, how the words used to be pronounced, how words used to be put together in sentences. How, this is a very fascinating endeavor, because languages can change in very unpredictable ways, and what linguists love to do is to look beneath the surface diversity and find the ultimate protounity that the languages had before they split off from each other.

NARRATOR: [voice-over] But recognizing this ultimate proto-unity is not easy. Take an example from English. Here is the Lord's Prayer as it would have sounded spoken in Old English, 1,200 years ago. Now listen to Middle English, spoken 800 years ago. It's more intelligible, but still not familiar. Over the course of 1,200 years, English has changed so dramatically that Old English sounds to us like a foreign language. But English is relatively easy for linguists to study because of its long written history. This phenomenon is true for many of the Indo-European languages, making this the most studied and well-researched language family in the world. The 100 languages that comprise the Indo-European family are spoken by half the world's people.

Another important language family is Sino-Tibetan, spoken by one-quarter of the world's population. Linguists estimate this family includes about 250 to 300 languages. Apart from Chinese, Tibetan and Burmese, the majority of languages in this family were not written down until this century. At the University of California, Berkeley, James Matisoff and his students have spent the last eight years figuring out which languages belong to this family by mapping out the details of their relationships. Their goal is to produce the definitive historical thesaurus of the Sino-Tibetan language family.

JAMES MATISOFF: This is one of the great language families of the world, over a billion speakers, and it's very much understudied compared to other language families, like Indo-European or Semitic or Bantu, so it's long overdue that this family receives the attention it deserves from the linguistic world in general. And it's called a thesaurus because the organizational principle is by semantic field, not just by alphabetic order. So the first field we're dealing with is body parts. We've been working on them for several years. After that, we'll do animal names, kinship terms, verbs of motion, other areas of the vocabulary, by -- by their meaning, not just by their sound.

How do we collect this data? Well, first of all, we use published sources, dictionaries, as many dictionaries as we can get our hands on, on one or another language in the family, and we go through them to extract the body part terms. So somebody has to go through manually and check all the words which have to do with parts of the body, and then we input them into the computer and get them ready for etymological analysis. And then comes the really hard part, and the interesting part, and that is to sort out these forms according to how they're related to each other.

NARRATOR: [voice-over] As they discover common roots in a wide range of languages, patterns of sound and meaning start to emerge.

JAMES MATISOFF: Okay, why don't we call up the words for eye from the database?

UC-BERKELEY STUDENT: All right, that's [*unintelligible*]

JAMES MATISOFF: Okay. You see, we have hundreds of forms meaning eye in the various Sino-Tibetan languages, and now's the time to try and analyze them, do something with them. We notice lots of these words have the shape *mɪk*, or something similar, sometimes *smɪk* or *myak*, so one of the next steps is to put them all in one place and examine them together. So why don't we call up all -- all of the words which have the shape *mɪk*? All right. And we see we have several screens full of words with that shape, so this is good evidence that we're dealing here with a genuine root in the proto-language, because the great variety of the languages and the fact that they're not spoken in geographically contiguous areas means that we have to reject borrowing as a possibility, and we notice that a lot of these forms are not just monosyllables, they have two or three syllables, and we notice they have meanings which involve eye, but which mean more than eye, like eyelid, eyelash, eyebrow, eye crud that gets tuck in the corners of the eye at night, to be jealous, as we say in English, to be green-eyed, except there's another metaphor in Tibet or Burma. So we fell responsible for giving an explanation, an etymology, for every single syllable of every word, if we can. And if we can't do it, then we mark it with a symbol which means we can't do it yet, but we'll get back to it sometime.

NARRATOR: [voice-over] By finding the same root in different groups of languages, Matisoff begins to identify patterns of relationships among the Sino-Tibetan family. Occasionally, there is a language that doesn't quite fit, for example, the language of Thailand. There are hundreds of Thai words that are identical to Chinese. Thai has often been classified in the Sino-Tibetan family, but by comparing roots, Matisoff demonstrated more compelling Thai and the neighboring family called Austronesian. For example, eye in Thai is *ta*, not *mɪk*. Likewise, the root for eye in Austronesian is *ma.ta*. Perhaps the similarities that Thai shares with Chinese are due to borrowing, not descent from a common ancestor. This distinction is critical.

JAMES MATISOFF: The further back in time you go, it becomes very difficult to distinguish between inheritance from the common ancestor and borrowing from another group, especially in a family where there are few historical records and where the written histories don't go back very far. Also, it becomes increasingly difficult to distinguish descent from a common ancestor or borrowing from sheer chance, accident, and any two languages taken at random in the world will show a certain percentage of apparent similarities, even in basic vocabulary. And that's because there's only a limited number of sounds in human languages, and there are certain built-in constraints on the form of human language which makes accidental resemblance quite possible, and frequent, in fact.

NARRATOR: [voice-over] So, understanding why words are similar is essential to determining relationships among families. Although the exact number of language families has yet to be determined, most linguists recognize at least 200. Some of the principle ones, in addition to Indo-European, Sino-Tibetan and Austronesian, are Afro-Asiatic, Altaic, Dravidian, and Australian aboriginal.

One area of the world where the language picture is particularly complex is the Americas. With so many native languages facing extinction, linguists have been more involved with recording these languages than classifying them. Here, along the ancient shores of Flathead Lake in northwestern Montana, Salish speakers from the Flathead Indian reservation are trying to prevent their language from disappearing. These are some of the last fluent speakers of Salish, a language known to have been spoken in this region for thousands of years.

GERMAINE WHITE, Flathead Culture Committee: Salish is one of the languages that's targeted not to survive, and that's frightening to me, because we carry our culture, we carry our tradition, we carry our history, the very history of who we are, through our language, and that's what it is we're doing here at language camp, we're trying to put our language in context, in cultural context, to create a new generation of fluent Salish speakers.

NARRATOR: [voice-over] Today, on the Flathead reservation, there are approximately 6,300 tribal members, yet fewer than 100 are fluent Salish speakers. Unfortunately, of the remaining speakers, the vast majority are elders. Historically, Salishan was one of the most extensive language families of the Northwest. Linguists believe there were no fewer than 23 distinct languages in the family. By the 18th century, at least 100,000 speakers spread over 22 million acres, from southern British Columbia to western Montana. Then Salish speakers had their first encounter with whites, a friendly meeting with Lewis and Clark in 1805. Gradually, Native American communities came under the influence of the settlers and missionaries that soon followed. The Jesuits were the first "black robes" to live among the Salish. Initially, they were welcomed. Adults went to church and children went to their boarding schools. But tensions mounted as priests demanded that the Salish children speak English, forbidding them to use their native tongue. It took only a hundred years for a language which had thrived for millennia to be on the verge of extinction.

Today, support for the tribe's effort to renew the language and preserve its cultural traditions is growing among the members. On a mountainside deep in the forest, Chauncey Beaverhead harvests cedar bark in the same careful way his grandfather and great-grandfather did a hundred years ago. Back at the campground, parents look on as their children painstakingly try to master the handicrafts that were once essential survival skills for their ancestors. But as the children concentrate on making their baskets, surrounded by sounds of English and Salish, another very important project is taking place. The tribe has invited linguist Sarah Thomason to work with them on a written record of their language and customs.

SARAH THOMASON, University of Pittsburgh: When I first started working on Salishan languages, reading about them, my main interest was historical. I'm a historical linguist, I wanted to find out about the borrowing situation in this part of the country and -- and neighboring parts of Canada. but when I started working with the tribal members, with elders on the reservation, I found that what they wanted and needed was somebody who could help them with their preservation efforts.

All right. [Salish] and that means?

SALISH ELDER: It's getting daylight. Early -- early daylight

SARAH THOMASON: Could you say it once more, please?

NARRATOR: [voice-over] Without a fairly complete written record, the death of the last native Salish speaker would mean the permanent loss of the language. Thomason has been working with this group of elders to create a Salish-English dictionary, as well as to preserve descriptions of traditional life for future generations.

SARAH THOMASON: They get themselves decked out?

SALISH ELDER: Mm-hmm, yes.

SARAH THOMASON: Like for the war dances?

SALISH ELDER: Right. Decked.

SARAH THOMASON: Okay, so let's go over it and see how many mistakes I've made, so you can correct me, so I don't get it wrong. [*Salish*], they finished the canvas dance. [*Salish*], it's getting light.

NARRATOR: [voice-over] Nearly half of the tribal languages known to be part of the Salishan family are already extinct. Salish has thus far been spared.

The loss of so many languages is an obstacle to understanding the full richness of the linguistic history of the Americas. Of the 1,600 languages once spoken here, only a third exist today. It's estimated that these languages, both living and extinct, might include as many as 200 language families, but despite this scant amount of evidence, there is no lack of determination to draw a complete picture of the languages of the Americas. At Stanford University, one linguist who has been intrigued with the language puzzle of the Americas for many years is Joseph Greenberg.

JOSEPH GREENBERG, Stanford University: What keeps me going is a curiosity about the whole thing, and I'm attracted, as a matter of fact, to areas of the world in which classification has not yet been accomplished to people's satisfaction. There are always new etymologies to be discovered, and in doing that, it's very much like detective work.

NARRATOR: [voice-over] Many years ago, Greenberg received worldwide acclaim when he applied his detective skills to classifying the thousand languages of Africa. Although the African languages had been recorded for centuries, very little systematic study had been undertaken.

JOSEPH GREENBERG: In Africa, it was obvious that there were, first of all, a very large number of languages, a great many unresolved questions, and it seemed to me that the sensible thing was to actually look at all of the languages. I usually had preliminary notebooks in which I took those elements of a language which, on the whole, we know are the most stable over time. These are things like the personal pronouns, particularly first and second person, names for the parts of the human body, and words for important objects in nature that are part of everyday life, like fire, water, house, and so on. I would look at a very large number of languages in regard to these matters, and I did find that they fell into quite obvious groupings.

NARRATOR: [voice-over] Linguists had already postulated three language families: Afro-Asiatic, Niger-Congo, and Khoisan. Greenberg's analysis revealed a fourth, Nilo-Saharan, which had been considered part of NigerCongo. This new family suggested a fundamental connection between languages that appeared extremely different. For some, the reclassification provided important insights about African migrations.

MERRITT RUHLEN: Linguistic classifications tell you about history. Each language family represents one historical event. Once you have an overall classification, then you can make certain historical inferences from that classification. This is exactly what Greenberg did in Africa, where he showed that the very widespread Bantu group in southern Africa was most closely related to languages that weren't Bantu, but which were almost Bantu, semi-Bantu, found in Nigeria. And from this classification he hypothesized that the Bantu family had spread from the area of eastern Nigeria throughout all of what is now southern Africa, so this historical inference was made once he understood what the proper classification was of these languages.

NARRATOR: [voice-over] Encouraged by his new picture of the relationship among the language families of Africa, Greenberg spent the next 30 years trying to solve the complicated language puzzle presented by the Americas.

JOSEPH GREENBERG: Nobody had a premise of more than anything other than the very large number of groups. There were no widespread groupings. So I began to take the common words, write them down, so on, and look at them, and eventually I put them into notebooks, and the notebooks are like the ones I have here, in which you have the names of languages down one side, and down the other -- one can get 80 languages in a notebook like this -- and across I have various words, in English, for which we find translations in the American Indian languages. So, for example, on this page, after having finished putting the numerals in, I have the pronouns, so I have I and thou, the second person singular pronoun, but the notebook is actually fairly extensive and contains hundreds of words in a very large number of languages.

NARRATOR: [voice-over] Taking a word like blood, Greenberg wrote down its translation in language after language. When he discovered a clump of similar words in different languages, he tried to confirm the link by looking at other words in those languages. The results led Greenberg to a radical reinterpretation of the language families of the Americas. Instead of hundreds, he posited only three families: Eskimo-Aleut, Na-Dene, and the most notable, Amerind, a new super-family which threw in languages spoken from the Hudson Bay to Tierra del Fuego. Greenberg's new classification and his methodology met with strong scientific criticism.

JAMES MATISOFF: Eye balling data is pre-scientific, or nonscientific. There are so many ways you can be led astray, because very often words look as if they have some connection, and they have no historical connection whatsoever, it's just chance. And, on the contrary, words which you never -- might never have thought have any connection do, in fact, come from the same root. So, even in languages which we know well, like our own native language, our judgments, unless we've just looked something up, are liable to be absolutely wrong, our judgments on whether things are related or not. How much the more so when we're dealing with languages we have no academic or personal knowledge of, and which have been badly recorded, for the most part, and when we're trying to reestablish relationships which go back untold thousands of years. The potential for error is enormous unless you have some methodological constraints to guide you every step of the way.

NARRATOR: [voice-over] But sometimes, regardless of approach, historical linguistics is faced with an unsolvable puzzle. There is one language in Europe which has baffled scholars for centuries. It looks like a typical French village, but its graveyard holds a linguistic secret. Inscribed alongside the French is the mysterious language of the Basque people. The language is called Euskara (-sp), and it has resisted any classification so far. It is called a language isolate, an orphan among languages with no known relatives. The land of the Basques straddles the borders of France and Spain. No amount of analysis has been able to link Euskara to French, Spanish or to any European language, nor, in fact, to a language anywhere in the world. How could this linguistic isolation have come about? Perhaps it was the fierce independence of the Basque people, their resistance to outside invaders and their strong history of oral tradition. But, whatever the reason, the Basque language has withstood centuries of influence. Scientists have wondered whether a biological comparison between the Basques and their Indo-European-speaking neighbors would reflect that isolation as well.

LUIGI CAVALLI-SFORZA, Stanford University: What we ordinarily do in biology is, really, bilateral comparisons, but we do them all, all the possible ones.

NARRATOR: [voice-over] Geneticist Cavalli-Sforza of Stanford University was a pioneer in the search for notable biological indicators.

LUIGI CAVALLI-SFORZA: They must realize that there is a degree of relationship, and that it's very important to take that into account; otherwise, you cannot do anything.

NARRATOR: [voice-over] Cavalli-Sforza was interested in exploring historical relationships among different populations by examining their genes, rather than their languages. Would his research team find the Basques as unique as the linguists found them? If the Basques are as isolated as their language suggests, this isolation might also show up in their genetic makeup, blood groups, DNA patterns and so on. New techniques now make it possible to carry out much more detailed analyses of individuals and populations, using just a few living cells, in this case, cells from a hair follicle. The DNA pattern not only distinguishes the Basques from their neighbors, it suggests they must have been among the earliest people to settle in Europe.

LUIGI CAVALLI-SFORZA: Basques were recognized as genetically different a long time ago. Basques are so different that they must have been Proto-Europeans. Basques were probably the descendants of cultures that have made all those beautiful painted rock paintings in the southwest of France and in the north of Spain.

NARRATOR: [voice-over] These cave paintings, many of them located in Basque country, were painted 15,000 years ago. Since the genetic data suggests the Basques have been a distinct group for thousands of years, isolated from other peoples, it may have been their ancestors who painted these caves during the last Ice Age. Although this conclusion is speculative, Cavalli-Sforza is trying to use these techniques to solve other linguistic puzzles, including Greenberg's controversial classification of Native American languages.

DNA samples from many different tribes in North and South America were collected and analyzed in Cavalli-Sforza's lab at Stanford. He believes his results provide a strong confirmation of Greenberg's groupings.

LUIGI CAVALLI-SFORZA: When we took all the data from American natives, they clearly fell into three classes, and they correspond exactly to the linguistic families that have been postulated by Greenberg. Not only that, but the family which is most heterogeneous of all genetically is the one that is linguistically more heterogeneous of all.

JAMES MATISOFF: Even if it's true -- let's accept, for the sake of argument, for a while -- that the New World was settled by exactly three waves of immigrants, the Amerinds and the Na-Dene and the Eskimo-Aleuts, let's even assume that's true. What is there to show that they were linguistically uniform when they migrated, or that they didn't change their language dozens of times, if the language wasn't creolized, that they didn't abandon their language and adopt a new one? We can see that people can change a language within a generation. It happens all over the world. And suppose some future linguist 10,000 years from now was looking at the DNA from United States fossils. He would be very confused, indeed, because he would find all kinds of racial genetic strains which wouldn't tell him anything about the fundamental linguistic unity of this country, that we all speak English now.

NARRATOR: [voice-over] One good example of language change occurring in less than a generation can be seen in Philadelphia. Here, a team of linguists has carried out fieldwork over the last 20 years to see at what rate English words change, and why.

WILLIAM LABOV, University of Pennsylvania: When I first came into this field, I was interested in finding out how language was changing, as it was used in everyday life, and these tapes that you see here are part of the archives of this room, going back to 1963, when I did a little study in Martha's Vineyard. Because I noticed on that island that people were saying sight and fight and right, going back to what seemed like a chose as a community where almost all the vowels were changing, and I came here to try to find out, if I could, why language was changing. The 19th-century theories about it would argue that it was either the people at the bottom of the heap who were changing it, because of laziness and ignorance, or the people at the top, because they had such prestige. But we'd found out that the opposite was true, that the sound changes were in the hands of the people who were the most important, local people.

Ann Bauer (-sp) is one of the field workers who began this study with me in the 1970's. Celeste Sweeney (-sp) is one of her most important contacts, the center of a social network here in south Philadelphia. In every neighborhood, you need to know the people who are the central figures, so that you can understand how society works and who influences who.

NARRATOR: [voice-over] Ann Bauer and Celeste Sweeney have become close friends over the years. They talk with each other in a relaxed and informal way.

ANN BAUER: Your mom made abelind (-sp). How did she do that? How did she make this?

CELESTE SWEENEY: Well, then, we she would make sauce, gravy -- we call it gravy, you call it sauce -- and she would put gravy on top, and then the sausages. And then, like some people, they used to eat it on a big board.

WILLIAM LABOV: In the last 60 years, there have been massive changes in American English.

CELESTE SWEENEY: Believe me, we ate properly.

WILLIAM LABOV: In the history of English, the vowels have always been the ones that move, and the consonants have stayed put. And over the course of time, small changes add up into great changes.

ANN BAUER: Your dad wasn't working during the Depression, no?

CELESTE SWEENEY: No, not at all. He worked for a guy in a shoe store. My father used to make shoes. He was a shoemaker, he made all -- the whole shoe, and it got so bad that they were paying him in postage stamps.

ANN BAUER: Son of a gun.

WILLIAM LABOV: We're taking the bad to "baad," the word out to "out." You notice that go moves to "go" to "go." And you notice that two goes from "two" to "two." In the meantime, sight and fight are becoming "sight and fight" and "sight and fight." There are other changes that are just beginning to appear, where A as in maid and pain becomes maid and pain, so that snake and sneak then sound the same. So we have a rotation of the whole vowel system which is happening in different ways in different cities in the United States, and in England, too.

NARRATOR: [voice-over] By measuring changes in Celeste's speech patterns for over a decade, and comparing her results to those of other Philadelphians, Labov has been able to observe language change in action, but how important are these apparently small changes in pronunciation to the overall history of languages?

WILLIAM LABOV: Whatever the forces that are producing this change, they must be very powerful, because they really do interfere with understanding. Our current research is dealing with cross-dialectal comprehension, and we've taken three cities, Chicago, Birmingham and Philadelphia, which were becoming more and more different, and we find, indeed, that people do not understand the sounds in the dialects of other cities, and even within the city, the older people don't understand the younger people when it comes to using those sounds. So that's the process which several hundred or several thousand years ago led to the gradual differentiation of languages and the loss of intelligibility. I'm not saying it's going to happen in the United States, because there are other factors at work there, too, but we can trace that day-to-day change which ultimately leads to two different languages.

NARRATOR: [voice-over] If English shows significant change within a single decade, the implications for linguists who are trying to study a language believed to have been spoken 15,000 years ago are enormous. Yet an effort is underway to do exactly that. One of the leaders of a controversial group of linguists who believe in the Nostratic theory is Vitaly Shevoroshkin. This theory claims to identify an ancient superfamily of languages from which many of today's language families have descended. It wasn't until the 1960's in Russian that the Nostratic theory was approached with modern linguistic techniques by Vlatislav Ilyich Fedich (-sp). He believed he could work back in time from several reconstructed languages 6,000 years old to find a more remote common ancestor, a language he called Proto-Nostratic. Today, Vitaly Shevoroshkin, an original member of this Russian group, is convinced of the importance of his mentor's work.

VITALY SHEVOROSHKIN, University of Michigan: He could see and find in the [*unintelligible*] exactly things which we -- which fit, and that is the most important thing in linguistics, because there are so many data. And he managed to establish precise sound correspondences between these Nostratic words in different languages, and make other things like reconstruct grammar and semantics and lexics and so. So it was -- it was something which was done in a very precise way, and that's why it is so great, I think.

NARRATOR: [voice-over] The search for an ancestor language begins with modern-day words. Comparing water in English, Russian and other related languages suggests a common ancestor. Six thousand years ago, water was probably wod. The Russian group goes farther. They start with several of these reconstructed languages. For example, comparing 6,000-year-old words for water, the Russians argue for the ancestral word wete, which they believe belonged to a language spoken about 10,000 to 15,000 years ago.

COLIN RENFREW: If there really were a Nostratic language family which would embrace a whole series, include Indo-European, it would include the Semitic languages, in fact, the larger Afro-Asiatic family, including the languages of north Africa, it would include the Altaic languages and so on, it would be a vast area which would be populated by people speaking languages descended from Proto-Nostratic. If one follows the divergence hypothesis that one can them back through time to a common origin, it would mean that somewhere there would be an area where Proto-Nostratic was spoken at a particular time, perhaps 10,000 years ago, or a little more.

NARRATOR: [voice-over] Another Russian Nostraticist working today is Aharon Dolgopolsky. Here, in the midst of one of the oddest collections of dictionaries and grammars in the world, he is trying to recreate a complete grammar, syntax and vocabulary for the Proto-Nostratic language. He starts with words he believes are more resistant to change over time.

AHARON DOLGOPOLSKY, University of Haifa: Linguists know that what is called the kernel vocabulary is usually stable. For instance, the word for water, you know in English is just the same as in German (was ser) and as in Russian (voda). So we know that -- in which meanings we can expect to find a word which has been preserved for thousands of years. Well, it includes body parts, the words for water, and to eat, to be man, et cetera.

NARRATOR: *[voice-over]* Using this method, Dolgopolsky argues, he has reconstructed over a thousand Proto-Nostratic words. They vividly evoke, for him, the rhythm of the life lived 15,000 years ago.

AHARON DOLGOPOLSKY: Through the telescope of the vocabulary, we can discern a hunter who is -- is following [*Proto-Nostratic*] the tracks [*Proto-Nostratic*] of a beast [*Proto-Nostratic*] is casting a spell [*Proto-Nostratic*] and is trying to hit [*ProtoNostratic*] the target and is afraid of missing [*Proto-Nostratic*] it. Among the animals he hunts [*Proto-Nostratic*], there are different kinds of antelopes [*Proto-Nostratic*], et cetera. He knows a lot about the anatomy of animals, meat [*Proto-Nostratic*], marrow [*Proto-Nostratic*], spleen [*Proto-Nostratic*], some words are connected with spiritual culture, such as the meaning to make magic, to use magical forces [*Proto-Nostratic*].

NARRATOR: *[voice-over]* This picture that Dolgopolsky paints of the Proto-Nostratic world is controversial, and not widely accepted. In fact, most linguists argue that any attempt to come up with a language spoken 15,000 years ago is pure speculation. At the University of Pennsylvania, Professor Donald Ringe takes issue with the Nostratic approach.

DON RINGE, JR.: As far as I can tell, the observed rate of basic vocabulary loss in languages imposes a limit of about 10,000 or 12,000 years. That would be about as far back as we can reconstruct proto-languages using scientific methods, and it should come as no surprise that all the generally recognized language families -- Indo-European, Algonquian, Afro-Asiatic, Uralic, that sort of thing -- began to diverge and diversify within that window of the past 10,000 years.

NARRATOR: *[voice-over]* For Ringe, the problem is this. As an ancient language gets passed on from generation to generation, the population shifts. People move away, mix with others or divide into different groups. Changes in the language accumulate. New sounds and new words appear, until after 10,000 years, there is no way to be sure that any of the original words are left. But Nostraticists argue that there are core words, like pronouns, which resist change, and it's these specific words they look for in each language family. For Ringe, even if particular words are alike in a variety of language families today, the similarity is not proof that they have survived from some ancestral language.

DONALD RINGE, JR.: When you have most of the original words lost and only a few remaining, you really can't tell the difference between resemblances which are real and reflect a common source from which the language is derived, and the resemblances that are simply kicked up by chance, static, statistical noise, so to speak. There is a real limit, as we go back in time, on how much we can reconstruct.

NARRATOR: *[voice-over]* Most linguists set a limit on language reconstruction of 10,000 years. However, fossil evidence suggests our modern human ancestry can be traced back 100,000 years. Could this fossil record shed any light on when language originally evolved?

CHRIS STRINGER, Natural History Museum, United Kingdom: One of the fundamental questions at the moment in anthropology is how far back do we have to go in time to find a common ancestor for the shared pattern of humans that we find all over the world? Well, here we've got a reconstruction of skull and jaw from a specimen found in Ethiopia in 1967, at a site called Omokibish (-sp). This specimen is probably over 100,000 years old, and my work, and that of colleagues, has shown that this is an anatomically modern specimen, and there's quite a bit of evidence now that points to Africa or perhaps the Middle East as the place which has the earliest occurrence of modern people. Modern human language must have been in existence by 40,000 years ago, because we have evidence of complex human behavior by that time in early modern people. For example, in Europe, the Cro-Magnons had clearly complex social systems, symbolic behavior, art, many of the things which we associate with modern humans and hunter-gatherers all over the world. And so I feel that by that time there must have been full language of a modern human type. But to go back further, it becomes

more difficult to track the existence of such a complex language. I would guess that such a thing was, at least in the early stages of development in these populations, a hundred thousand years ago in Africa.

NARRATOR: [voice-over] But fossil evidence gives us no help in solving the puzzle of what kind of language our ancestors spoke. Still, some linguists believe it is possible to trace human language back in time even further than the Nostraticists. By looking for connections among all the language families of the world, they try to reconstruct a mother tongue, possibly spoken from 40,000 to 100,000 years ago.

MERRITT RUHLEN: Now, using traditional methods of -- of comparative linguistics, linguists have been able to show that there are many language families around the world. If one simply compares these language families among themselves, in other words, looks at the -- look at the words which have been identified by scholars in those individual families as characteristic of those families, one runs across the exact same word in family after family after family. Two of the most famous have become *tik* (-sp), meaning one or finger, and *pot* (-sp), meaning two. You find these two roots in family after family after family, and I think that there is no way to explain why you find these roots, as well as many others, except to hypothesize that they all derive from one common source.

NARRATOR: [voice-over] Another example Ruhlen offers is the word *maliqa* (-sp). Appearing in English as *milk*, the word form shows up around the world with meanings which are associated with milk, or suckle or breast or throat. For Ruhlen and a few other linguists, this is compelling evidence that deep in the mists of time there was one word for something like to suckle, which was survived in each of the world's language families. But to his critics, a few isolated examples do not make a convincing case.

AHARON DOLGOPOLSKY: It's quite possible there are some very -- well -- very impressive examples, but impressive examples are one thing, but serious reconstruction, in order to make it, we must first reconstruct all kinds of languages. This is one thing. That's why -- that's why I think that it is probably feasible, but just today it is probably too early.

DON RINGE, JR.: It seems overwhelmingly likely to me that all human languages derive from some common source. I think most linguists would agree with that. I think we would all be shocked if anyone ever came up with hard evidence that all human languages don't derive from some common source. But, unfortunately, that's not the issue. The issue is whether we can offer objective proof that all human languages derive from a common source, or whether we have to be content to believe it.

JAMES MATISOFF: Even if we accept, for the sake of argument, the Nostratic theory, and say that the time depth is 15,000 years, 15,000 is not 40,000, and it's not 200,000. You just cannot go back. There are glaciations in between there, too, by the way, and all kinds of catastrophes on the global scale between 200,000 years ago and now. How could anything been left of that presumed original linguistic unity, even if it did exist? Still, it's nice to think about. It's very nice to think about the days before Babel, when everybody spoke exactly the same way. But it's a -- it's a dream, it's a belief. It's not scientifically testable, one way or the other.

NARRATOR: [voice-over] Gazing upon the silently evocative images from the past, it's only natural to want to know more about these artists and their message. It's easy to imagine that a people who could visually symbolize their world could also speak a complex language. New clues to the past continually emerge as we compare the world's languages and trace their relationships back in time. Language is the mirror of our humanity, and only by studying its many reflections will we ever fully know ourselves.

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