

Language of the apes

Tower of Babel project follows the evolution of words

Christian Science Monitor and Will Clem

About 50,000 years ago, something happened to our ancestors in Africa. Anatomically modern humans, who had already existed for at least 150,000 years, suddenly began behaving differently. Until then, their conduct scarcely differed from that of their hominid cousins, the Neanderthals. Both buried their dead, both used stone tools, and as social apes, both had some form of communication, which some think was gestural. But then, "almost overnight, everything changes very rapidly", said Merritt Ruhlen, a lecturer in the Anthropological Sciences Department at Stanford University in Palo Alto, California. Humans began making much better stone tools. They started burying their dead with accoutrements that suggested religion and, perhaps most telling, Homo sapiens, the "wise" apes, began creating art.

Many scientists think human language enabled this "great leap forward". Language, they say, enabled abstract thought, the deciding factor in archaic humans becoming us. And because scientists surmise that language arose only once, they believe that before leaving Africa to colonise the world, all humankind may have spoken one language. Linguists have dubbed it "proto-world" or "proto-sapiens".

A multidisciplinary team of international scientists – primarily at the Santa Fe Institute in New Mexico and the Russian State University for the Humanities in Moscow – is working toward reconstructing that mother of all languages.

Headed by Nobel Laureate physicist Murray Gell-Mann, the international Evolution of Human Languages (EHL) project is developing a freely accessible etymological database of the world's languages. Where possible, EHL linguists are attempting to reconstruct – and then compare – ancestor languages, moving ever closer to the first human language.

The project has been dubbed "The Tower of Babel" – referring to the biblical tale of a time when all people spoke the same language.

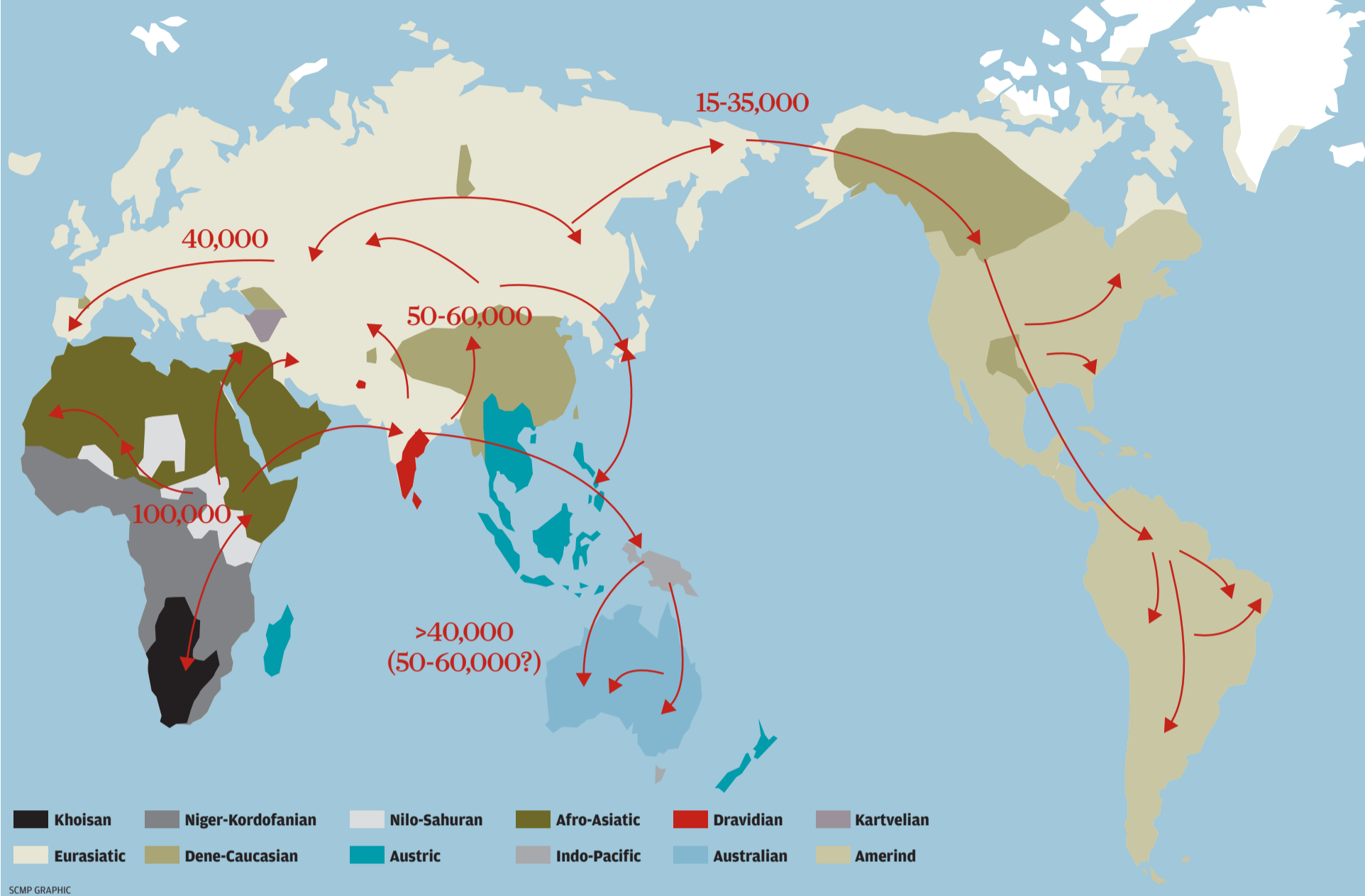
Viewed by many linguists as a fringe movement, the project has attracted much criticism. Many linguists say that historical languages cannot be studied beyond an 8,000-year threshold; they change too much, they say. Some take issue with the project's methods. A few words shared among reconstructed languages does not prove a familial relationship, they insist, especially far back in time.

Languages change constantly. Speakers invent or borrow words to suit their needs. But for reasons not completely understood, some languages change more than others. Italian, for example, has remained much closer to ancestral Latin than French. Lithuanian has many words that almost exactly match Sanskrit, which was spoken 3,500 years ago. And some language "families" like

Walk the talk

Evolution of Human Languages Project, Santa Fe Institute / Nature Genetics Supplement.

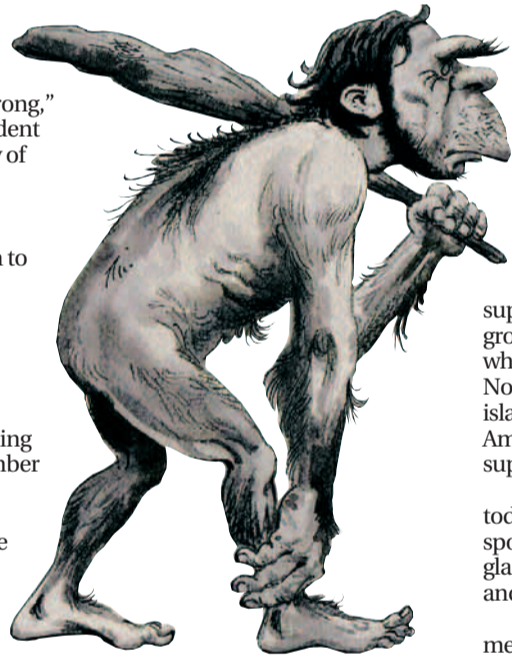
Figures indicate the number of thousands of years ago that migration is thought to have taken place, based on genetic research.



Afro-Asiatic retain words in common even after more than 10,000 years of divergent evolution.

"That time limit is totally wrong," said John Bengtson, vice-president of the Association for the Study of Language in Prehistory in Cambridge, Massachusetts. "Languages that have been separated 8,000 years get down to a low percentage of common words. However, that low percentage seems to be very stable."

And there begins EHL's approach. Linguists think that because certain words – including the pronoun "we" and the number "one" – form the basis of a functional language, they are much less likely to change or be lost. EHL linguists begin by comparing this "basic lexicon". They include "words that are thoroughly



essential and must have been in human language before significant cultural advances were made", said EHL team member George Starostin, head of the Department of Far Eastern Philology at the Russian State University for the Humanities.

Using this method, EHL has grouped all the world's languages into 12 linguistic superfamilies. They have tentatively grouped four of these superfamilies, which include languages of Eurasia, North Africa, and some Pacific islands (and maybe languages of the Americas as well) into one super-family dubbed "Borean".

An ancestor to a large share of today's languages, Borean was spoken some 16,000 years ago when glaciers covered much of Europe and North America, they say.

EHL linguists use several methods. One – the most

controversial, but not the most widely used, according to Dr Starostin – involves matching words and meanings across languages. For example, Dr Ruhlen and Mr Bengtson have noticed that a word roughly corresponding to "water", which they render in proto-sapiens as "AQWA", appears in many languages. In Latin it's "aqua"; in Japanese, "aka" means "bilge water"; in Chechen, meanwhile, "aq" means "to suck"; and in an African Kung dialect, "kau" means "to rain".

But critics say too many alternate explanations exist. Maybe the word was borrowed from one language and spread to the others. Perhaps it was onomatopoeic, a word that sounds like the thing it describes. Finally, the shorter the word – in some of the languages, just one syllable rather than two or three – the greater the possibility of a chance match. "You've presented

this list of words, but it looks like you can explain these lists in several different ways," said Lyle Campbell, a professor of linguistics at the University of Utah in Salt Lake City. "Their data is really easy to challenge."

William Wang Shi-yuan, head of the Language Engineering Laboratory at Chinese University of Hong Kong and a contributor to the project, admitted the approach was controversial but said it was based on well-established linguistic principles of reconstructing sound change.

"If you have enough spoken languages, take enough data and if you find enough resemblances, then you have to wonder, why are there these resemblances?" he said.

"There are only two major hypotheses for resemblances. One is through contact, the other is through inheritance. So in cases where you can rule out contact,

what you are left with for a considerable amount of resemblances is that they came from a common source."

Professor Wang said that was where the project's multidisciplinary approach came in, using what he termed "three windows on the past" to correlate linguistic data with findings from genetics and archaeology.

"The further you go back, the less reliable the reconstruction is," he said. "When we have separate, independent results from disciplines, each with its own reference, converging on the same or approximately the same hypothesis, then we can have a little bit more confidence."

"Once we have enough data lined up in the right way, sometimes things that are quite different can still be shown to be derived from the same source."

Human genetic evidence appears to support EHL's basic assumptions. The human genome indicates that humanity traces its ancestry to as few as 1,000 individuals who lived between 50,000 and 60,000 years ago. This small founding population may explain how the capacity for language spread so quickly.

Tentatively, EHL has grouped the world's languages into three superfamilies corresponding to these migrations: those that correspond with the coastal route, which include Papuan languages; those that correspond with the land route out of Africa, descendants of Borean, the best reconstructed; and the "click" languages spoken by the San, or "Bushmen", of southern Africa. Scientists think the San most resemble the first modern humans. Their language, almost unique in its use of click sounds that other early languages may have lost, might best conserve traces of proto-sapiens.

But Professor Wang said he remained sceptical of the basic premise behind the quest.

"In this I am very much in the minority [of EHL scholars], but I don't think there was just one proto-language," Professor Wang said. "I think it is much more likely that 100,000 years ago there were ancestral tribes all over Eurasia and it is not at all unlikely that many of them within a timespan of say a few thousand years came up with the idea of communication independently."

"Just like how the idea of pottery has independent inventions, the idea of making fire, the idea of having a writing system, these all were polygenetic inventions."

"I think it is likely language is also polygenetic, and if that is the case, global etymologies are much more suspect because they are from different sources."

EHL project view: <http://ehl.santafe.edu/intro.htm>

A diversity of Chinese tongues and dialects stretching back 6,000 years

The linguistic diversity of China's dialects and minority languages serve as a window on 6,000 years of development, according to a leading local researcher into language evolution.

"There are probably several hundred languages in China," said William Wang Shi-yuan, head of Chinese University's language engineering laboratory.

"The central government's official figure is that there are 56, but this is a very, very small percentage of the actual linguistic diversity."

"They want to keep the number down for obvious political, administrative and economic reasons, but if we look at the reality of the situation, it is a lot more than that."

Chinese languages that have become today's dialects, like Cantonese and Putonghua, were becoming dominant across Greater China during the Han dynasty (206BC-220AD), but minority languages had retained a

foothold in the south and west. "The Chinese languages belong to a bigger language group called Sino-Tibetan," Professor Wang said. "The Santa Fe Institute [in New Mexico] thinks that Sino-Tibetan belongs to an even bigger group, which is called Dene-Caucasian."

That grouping gives Chinese some surprising relatives. "Dene-Caucasian includes not only Chinese, but Basque. It includes Ket, which is spoken in the Yenisey River region of Russia."

The Basque language, spoken in an area spanning the border between France and Spain, between Bilbao and Biarritz, has long been regarded as a linguistic anomaly as academics have been unable to link it to any other extant European languages.

Ket is the only remaining language of the Yeniseian language group, spoken by just a few hundred people in an isolated part of Siberia. It is also linguistically unrelated to the

languages spoken by any surrounding ethnic groups.

Professor Wang said his research showed Chinese had begun to break away from other Sino-Tibetan languages about 6,000 years ago.

Although dialects of Chinese were "in a sense all the same age", they had evolved separately and some had retained archaic pronunciations that had been lost in others.

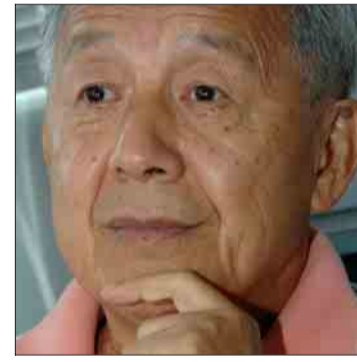
"In genetics we know that there are certain mutations that take place. In languages we have linguistic mutations. These mutations can take the form of change in the morphological makeup – prefixes, suffixes – or it could take the form of sound change," Professor Wang said.

"The places where you have the most cultural diversity and migration or interaction, these are the places where the languages change fastest."

"Because Beijing has been capital of China for 800 years, the dialect of Beijing is by far the most simplified, by

In genetics we know certain mutations take place. In languages we have linguistic mutations

William Wang, head of CUHK's language engineering laboratory



far the most evolved. It is like the way London English has in some ways lost more distinctions that are preserved in Yorkshire, preserved in Lancashire and other parts of England."

And while Hong Kong Cantonese was evolving rapidly due to the city's role as a global meeting place, that had not been the case historically.

"Cantonese is actually very, very useful for studying the history of Chinese because it is the most conservative dialect," he said.

"A lot of things lost in lots of other dialects – in fact, most other dialects – are preserved in Cantonese for whatever reason."

One example was the hard consonants at the end of Cantonese syllables – final -k, -p, or -t sounds after the vowel – which have entirely disappeared in northern dialects of Chinese. In Putonghua, syllables only end in vowels, except for -n or -ng.

"If you trace these consonants, you can go way back. In Mandarin, they are

all lost." But that did not mean Cantonese had remained completely free of outside influences.

"Hong Kong Cantonese has a lot of loan words from the Zhuang, from the Miao [minority groups]," Professor Wang said.

Place names such as Pok Fu Lam and Kowloon were examples of Cantonese vocabulary that was originally borrowed from the Zhuang's language.

"We see the characters [for Kowloon, *gao long*] and we think, 'Oh, of course, nine dragons'," he said. "But it is not that. It actually has a different source."

An equivalent in English was the fact that in some regions of the United States, asparagus was known as "sparrow grass".

"But it has nothing to do with birds and nothing to do with grass," he said.

Will Clem

Q&A

My son is studying at a Chinese-language primary school. He's 10 years old and will soon be applying for a place at an international secondary school. We are a native English-speaking family, so his aural English is 100 per cent, and he loves reading. However, I heard that the admission tests for international schools can include assessment of creative writing skills. The school he's at does no creative writing at all. How can I help prepare him?

Teacher Julie McGuire answers:

Some admission tests for international schools do include a creative writing assessment. However, many schools do not require evidence of creativity before

entry, focusing rather on key verbal and comprehension skills and, as it sounds like your son is competent in these areas, this should not be an issue. Admission tests do tend to vary greatly so it is hard to generalise and the criteria can change quite frequently so it is worth checking to make sure you have up-to-date information for the school you are applying to.

Whether your son needs creative writing skills for the test or not, he is likely to need them once he starts secondary school, so it would be advantageous for him to widen his writing and thinking repertoire. As your son is a keen reader, his experience and knowledge of books will help him learn to write in a creative style.

A good start is just to do some verbal storytelling. You could do this as a fun

family game using the "conch" idea where a person picks up an object and tells part of a story, then passes it on to the next person to continue the story. You could also revisit favourite stories that you read as a child or remember treasured or humorous family events.

The best way for your son to learn to write creatively is simply for him to write. Like most things, we learn and improve by doing and practising. Some pupils prefer to devise a precise plan of happenings and characters while others prefer to write from scratch and allow them to unfold.

You may find that, almost without realising, he has a wide variety of writing ideas himself. There are also various stimuli he could use. Poems can be a quick and easy way into creative writing. He should start by reading some

children's poetry books, which are usually extremely accessible. They are much shorter than stories and can be emotive and fun. Initially it is better to keep away from writing rhyming verse, as this can be quite difficult and restrict creativity. Poetry is unlikely to be in the test but could be a good starting point to get him excited about writing and feel that he has achieved some success.

Pictures always provide interesting thinking points (e.g. images from magazines, books or comics). Get your son to brainstorm and describe everything he can see in the picture, then use the ideas as inspiration for a short story or poem.

Reading part of a story and finishing it off or rewriting the ending is also effective. Even using the beginning or end line of a story can act as a starter.

Feedback from you or siblings and friends can be extremely encouraging and will help your son to grow as a writer as well as give him an audience. Always start with positive points, praising parts you thought were particularly well written or imaginative, then give one or two pieces of constructive criticism and talk with him about how he might improve these sections. Always focus initially on content rather than correctness. Editing of grammar and spellings can be done at a later stage.

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