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TONGUE TIED

Endangered languages often contain key linguistic insights found nowhere else. But the tongues are disappearing faster than scientists can document them. **Jessica Ebert** reports.

The tips of dried sage burn in a small cast-iron pan like a row of lit matches. Alex Gwin, an elder of the Hidatsa Native American tribe, carries them from room to room chanting softly in his native tongue. The tiny two-bedroom house on North Dakota's Fort Berthold Reservation fills quickly with the sweet smoke.

Gwin extinguishes the sage twigs and sits at the dining-room table across from John Boyle, a linguist at the University of Chicago in Illinois. The burning of sage "cleanses the house so there is room to talk objectively", explains Gwin. Now he is ready to talk about — and in — the language of his ancestors.

Hidatsa, like many languages, is on the verge of vanishing and taking with it crucial linguistic and cultural data. As fluent speakers grow older and major languages such as English, Spanish, Arabic and Mandarin Chinese overwhelm small cultures, fewer young people choose to cultivate their native tongue. Only about 75 people speak Hidatsa fluently. Most of them, including Gwin, are over 50.

The world contains about 6,900 languages, but linguists estimate that at least half of these will vanish during the next century. Languages are fluid systems, constantly changing and adapting to speakers' needs; death is a natural part of that process. Yet languages are disappearing at an unprecedented rate. Every ten days or so, the last fluent speaker of a language dies, erasing key linguistic information. "Losing languages is bad for science," says Boyle.

Fragments of some are retained in written documents or recordings. But most have never been written down. They vanish without any documentation of their sounds, words or sentence structure. Such information can provide vital clues to understanding how the brain acquires, organizes and processes language.

In addition, small and endangered languages often display rare characteristics that help linguists understand the limits and versatility of language. They may harbour knowledge about the natural world and even offer insight into human migrations.

Strong language

Yet linguists have not always appreciated the importance of rare tongues. In the 1950s and 1960s, the influential linguist Noam Chomsky proposed that the human brain is prewired to learn language¹. His research prompted others to search for language 'universals' that underpin all tongues and so offer insight into the building blocks of human thought.

Some field researchers continued to document the quirky characteristics of little-known languages, which often challenged the language universals. "Essentially, every time we find another language, another universal bites the dust," says Doug Whalen, a linguist at Haskins Laboratories in New Haven, Connecticut.

For example, an important language universal involves the order of words in a sentence. An English sentence such as 'the boy hit the ball' follows a subject-verb-object (SVO)

word order. In Hidatsa, the same sentence would read '*maagarishdawacee ma'uudabi nigic*', or 'the boy the ball hit' — a pattern known as SOV. These are the two most common patterns, and certain others were long thought to be impossible.

But in the 1980s, linguists studying rare tongues in the Amazon, discovered the object-verb-subject (OVS) word order, which translates literally as 'the ball hit the boy'². "If linguists hadn't noticed those languages," says David Harrison of Swarthmore College in Pennsylvania, "we might still have a mistaken idea that OVS is an impossible structure for a language."

By the 1990s, linguists had joined forces to voice their concern about language loss³. This spring, the US National Science Foundation and National Endowment for the Humanities established the \$4.4-million Documenting Endangered Languages project. Another non-profit group, the Endangered Language Fund, is supporting Boyle's Hidatsa work.

On a September afternoon a few miles east of the North Dakota badlands, Boyle hunches over a notebook and elicits phrases from Gwin. "The part I like is when John throws crazy sentences at me," says Gwin, grinning.

Gwin calls his language a tool handed down from his grandmother and mother. "Native languages go to where the English language cannot travel," he says. "They are the key to talking to the spiritual world." Hidatsa was not always treated with such reverence; as a girl, Gwin's grandmother, Pearl Burr Young Bear, was placed in a boarding school where English was the only language permitted. Pearl would sneak into the boiler rooms with her friends to practise their Native American languages.

On this trip, Boyle is working with Gwin to

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find out how Hidatsa forms subordinate clauses, which in English often involve words such as ‘when,’ ‘if’ and ‘because’. He is also studying how Hidatsa coordinates nouns, noun phrases and clauses.

For the latter, Boyle asks questions such as “How do you say ‘the man and the girl sing’?” At one point he accidentally asks, “How do you say ‘the man can dance and sing’?” Gwin spoke the sentence in Hidatsa; Boyle, surprised, asked him to repeat it.

“I didn’t even think about how I was asking it,” says Boyle, but that small slip of the tongue revealed a characteristic of Hidatsa that he didn’t know: the use of ‘can’ as a modal verb. Linguists had documented this in Crow, the language most closely related to Hidatsa, but never in Hidatsa itself. “Eliciting artificial sentences tells you a lot about the grammar and structure of the language,” Boyle says.

The written word

Field linguists often work for years with the goal of producing a dictionary of 10,000 to 15,000 words, a 300- to 400-page grammar describing the language, and a group of texts that show how the language is used. So far, Boyle has a basic Hidatsa dictionary of 4,500 nouns and verbs, a basic grammar book designed for high-school students, and a book of 133 irregular verbs. Native speakers use materials such as these in revitalization programmes; linguists study the details to define the limits of human cognition and language diversity.

For instance, many languages use suffixes called illocutionary markers to define the truth value of a statement. Hidatsa and other languages in the Siouan language family stand out by having as many as 18 of these markers.

In Hidatsa, for example, the basic sentence ‘the man kissed the woman’ is built using the words *macée* for man, *wiá* for woman and *iigiracóobi* for kiss. But a Hidatsa speaker would have to explain how he or she came upon this information. If the speaker witnessed the event and knows it for a fact, then markers would be added to make the sentence read ‘*macéeš wiáha iigiracóobitooreš*’. But if the speaker is telling a traditional story passed down through generations, the final marker would change, making the sentence: ‘*macéeš wiáha iigiracóobiwareec*’.

Documenting such variability shows the many ways in which people can put words together, explains Alice Harris, a linguist at the State University of New York in Stony Brook. “Languages are the natural laboratory for linguists,” she says.

At Swarthmore College, Harrison has spent years documenting rare languages in Siberia. He discovered that one such language, Tofa, has a single suffix, *-sig*, that can be added to any noun, changing it into a word that means ‘smelling of’ or ‘smelling like’. For instance, the word for reindeer in Tofa is *ivi*, so *ivisig* means ‘smelling like a reindeer’. The smell suffix had never been reported before; why it is impor-

tant to the Tofa people remains a mystery. But linguists argue that little pieces of information like this are essential for understanding the limits of how the brain organizes language.

“If linguists had only major world languages to study — say, Japanese, Hindi and Spanish — we would be severely handicapped in understanding human cognition,” explains Harrison. “Linguists need the oddest, quirkiest and most unusual languages and words to test our theoretical models.”

Languages of small cultures can even shed light on human migration. “A language is probably the most important artefact a culture possesses,” says Robert Rankin, a professor emeritus at the University of Kansas. “Language can tell us about the things that archaeology cannot.”

Speaking volumes

For example, the material artefacts of the Wiyot and Yurok tribes of northern California bear little resemblance to those of the Ojibwa, Shawnee and similar tribes of the northeast. But their languages share essential characteristics of grammar and vocabulary. “So the tribes must have come from the same group at some time in the distant past,” says Rankin. “This is really important information that archaeology could never have revealed.”

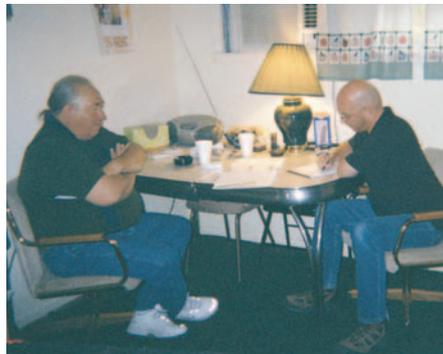
Small and endangered languages can also harbour indigenous knowledge, for example about medicinal plants and pesticides. This knowledge represents long-term adaptations to the land, says Harrison, and often cannot be easily transferred into another language. “Small cultures are a repository of knowledge about nature that is about to be lost,” he says.

In Tofa, for instance, each month is named after a hunting or gathering activity. The word for May means ‘digging *saranki* root month’ because it is when locals collect the bulb of the lily-like *saranki* flower, to be used year-round to treat colds and other illnesses. November is ‘hunting month’, and July ‘hay-cutting month’. The knowledge embedded in these words is lost when people begin using a more common language. Tofa children who now speak Russian no longer retain the monthly information, and many elders have also forgotten it.

Activists hope that the new push to save endangered languages will make a difference, but it is unclear whether the efforts will stem the rate of language loss. For many, time is running out. Nearly 550 languages have fewer than 100 fluent speakers.

And even as Gwin teaches Hidatsa in the schools, most children on the reservation speak English as their first language. Hidatsa may survive another generation or two, but ultimately it, too, is likely to vanish into the pages of history.

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John Boyle (top right) talks Hidatsa with Alex Gwin. Sergei Kongarayev (bottom) is only partly fluent in the Siberian tongue Tofa.

1. Chomsky, N. *Aspects of the Theory of Syntax* (MIT Press, Cambridge, Massachusetts, 1965).
2. Olawsky, K. J. *Leiden Pap. Linguist.* **2**, 43–68 (2005).
3. Hale, K. et al. *Language* **68**, 1–42 (1992).