

## Indo-European Pursuits

### Scientific paths diverge in the quest for ancient Eurasians

By BRUCE BOWER

For more than 200 years, scholars have noted striking similarities in nearly all the languages of Europe, many of those in India and Pakistan, and some in other parts of Asia. These far-flung tongues make up Indo-European, a family of languages that still kindles scientific curiosity about the prehistoric folks who gave rise to so many allied forms of speech.

In an ironic twist, Indo-European's close family ties have triggered an estrangement in the last decade between archaeologists and linguists, the two groups of scientists most involved in answering questions about the origins of modern Eurasians.

Archaeologists examine material remains at sites where people lived thousands of years ago, including a burgeoning number in central Eurasia that have opened up to Western researchers since the Cold War ended. Linguists use corresponding features of various languages to reconstruct words as the first Indo-Europeans may have spoken them.

Many archaeologists have come to view this linguistic exercise as potentially misleading and, at best, secondary to excavations of ancient human settlements. Linguists, in contrast, argue that their analyses reveal far more about the culture and thinking of the first Indo-Europeans than sculptures, pottery, and other mute remnants dug out of the ground.

Two new theories of Indo-European roots, both presented last December at the annual meeting of the American Anthropological Association in Atlanta, have now entered the fray. One attempts to unite the prehistoric Indo-European vocabulary pieced together by linguists with the latest archaeological evidence; the other looks at the spread of Indo-European tongues as a function of Eurasia's geography.

Comparative linguistics first arose in the 1860s. Its practitioners assumed that languages featuring comparable forms of many essential words — which differ slightly because of systematic rules for changing speech sounds in various languages — descended from a common proto-language. (In much the same vein, Darwin argued shortly thereafter that shared anatomical traits of modern animal species derived from a common biological ancestor.)

Linguists have since taken correspondences between known Indo-European languages and reconstructed a core of vocabulary, grammatical conventions, and pronunciation rules for what they call proto-Indo-European.

In 1926, British historian V. Gordon Childe published a theory of the origins of Indo-European speakers, based on what linguists knew about their speech and available archaeological evidence.

Childe held that the original Indo-Europeans, whom he called Aryans, were nomads who herded animals in the steppes north of the Black Sea, in what is now the Ukraine. Between 6,000 and 5,000 years ago, the Aryans migrated into Europe on horseback and conquered a series of cultures, spreading their language in the process.

The late archaeologist Marija Gimbutas drew on more recent excavations over the last 20 years to support Childe's scenario. She described several waves of expansion and conquest by mounted nomads who rode west from a homeland north of the Black Sea beginning about 6,400 years ago. Their male-dominated, warrior society replaced the relatively peaceful, female-centered civilization that had long existed in Europe.

A growing number of archaeologists now envision a kinder, gentler origin of Indo-European speakers. In their scenario, farmers from ancient Turkey and nearby regions began to move into Europe around 9,000 years ago, as their growing population spurred the acquisition of

more land.

After agriculturists settled in a new territory, they incorporated nearby hunter-gatherer groups into their economy. Indo-European farmers peacefully swallowed up one tract of land after another, and versions of their speech eventually enveloped much of Eurasia, according to this alternative proposal.

Colin Renfrew, an archaeologist at Cambridge University in England, first described this view in his 1987 book *Archaeology and Language: The Puzzle of Indo-European Origins* (Jonathan Cape, London). Several variations on Renfrew's theory have appeared since. For instance, archaeologist Marek Zvelebil of the University of Sheffield in England proposes that hunter-gatherer groups often learned from neighboring farmers how to cultivate crops, yet retained their own language. This slowed the spread of Indo-European speech and preserved some non-Indo-European tongues, such as present-day Basque.

Renfrew, Zvelebil, and others also express skepticism about the usefulness of rebuilding words from lost languages. Numerous social forces spur language change, they contend, not just military invasions or migrations. Languages take twists and turns that can mask their links to one another or create illusory connections, these researchers argue.

"The current relationship between archaeology and traditional linguistics can be described as a trial separation," says David W. Anthony, an archaeologist at Hartwick College in Oneonta, N.Y. "Archaeologists are failing to exploit what can now be understood about the kinship systems, religious concepts, and social organization of proto-Indo-European speakers through their reconstructed vocabulary."

Anthony hopes to counter critics of the linguistics approach, such as archaeologist John Robb of the University of Michigan in Ann Arbor. Robb argues that prehistoric Indo-European may elude curious linguists forever.

The growth of states and civilizations, which began around 6,000 years ago, probably wiped out the majority of languages that had flourished for the previous few thousand years in farming communities, Robb writes in the December 1993 *ANTIQUITY*. Linguistic loss was hastened in parts of the Indo-European world by the adoption of languages used in regional trade and the borrowing of words from foreign speakers. These words were eventually woven into entirely new "creole" languages, Robb holds.

Indo-European tongues predominate today by happenstance. They were spoken just outside the range of civilizations expanding out from the Middle East and thus escaped this linguistic onslaught, the Michigan archaeologist says. Moreover, some languages now lumped under the Indo-European rubric may have acquired vocabulary and grammatical resemblances through random changes over time, Robb says.

Such influences cannot explain the similarities in vocabulary, grammar, and rules for sound change that permeate Indo-European languages, Anthony counters. Sufficient raw linguistic material exists to rebuild extinct proto-Indo-European words, he adds.

For instance, "one hundred" appears as "shimtas" in Lithuanian, "centum" in Latin, and "satem" in Old Persian. Linguists have reconstructed the proto-Indo-European version of these words as "kmtom." From this, they can derive each of the later forms on the basis of known rules in each language for replacing one speech sound (which usually corresponds to one letter) with another.

This type of analysis also indicates that the first Indo-European speakers employed at least five terms for wheeled vehicles, Anthony contends. These include two words for "wheel," one for "axle," one for "thill" (the long pole that connects the vehicle to a yoke), and a verb meaning "to go or convey in a vehicle." Thirty-five corresponding words exist in languages belonging to all branches of Indo-European, from India to Scotland.

Renfrew has suggested that these terms appeared long after proto-Indo-European and that speakers of various languages borrowed them as knowledge of wheeled vehicles spread. But extensive technical vocabularies are rarely borrowed over such a wide area, Anthony argues.

Instead, he suggests, proto-Indo-European arose shortly after the invention of wheeled vehicles, about 5,500 years ago, and a vocabulary for these conveyances was quickly devised. Vehicle burials and other evidence of wheeled transport appear in Eastern Europe and the Near East between 5,300 and 5,100 years ago.

Like Childe nearly 70 years ago, Anthony places the Indo-European homeland in the Ukraine. Speakers of the proto-language, who had terms for plows, crop cultivation, and animal domestication, lived in an area no larger than that of modern Spain, he estimates.

Residents of this region rode horses at least 6,000 years ago (SN: 6/2/90, p.340). By 5,100 years ago, their graves contained solid-wheeled wagons and carts, probably once pulled by oxen. At that point, they had the means to travel eastward and exploit resources in the vast expanses of grassland spanning central Eurasia's river valleys, Anthony suggests. Ancestral Indo-European speech began its continental sojourn soon thereafter.

One of its early stops was in central Eurasia's Sintashta-Petrovka culture, which by 4,000 years ago had established heavily fortified settlements, raised large herds of animals, and built spoke-wheeled chariots (SN: 12/4/93, p.380). The mythology and rituals of the Sintashta-Petrovka peoples indicate that they contributed important elements to the practices of later Indo-Iranian cultures, says Anthony. Indo-Iranian languages make up a major branch of the Indo-European family.

Mobile pastoralists probably did not put their words into others' mouths forcibly, the archaeologist continues. Instead, foreign groups may have willingly acquired Indo-European dialects so they could share in the thriving economy of the former steppe peoples.

"People change the language they speak primarily because it's advantageous to their prestige and economic security, even if some coercion occurs," Anthony asserts. "At first, there may have been much emulation of the warlike, elite people from the steppes who entered new areas."

Densely populated farming communities in Western Europe probably also willingly incorporated the language and other traits of small steppe populations that traveled west.

Anthony's theory provides an intriguing perspective on more than 110 apparently European corpses unearthed in northwest China. Their dates of burial range from about 2,400 to 4,000 years ago. The bodies — which dried quickly after burial in the desert heat of Xinjiang Province and were preserved along with their clothes and various artifacts — possess long noses, blond hair, and other signs of European heritage.

Chinese archaeologists found the first of these corpses in 1978. Victor Mair, a specialist in ancient Asian cultures at the University of Pennsylvania in Philadelphia, began a collaboration with the Chinese in 1993 aimed at recovering more ancient bodies and analyzing their genetic makeup.

These European-looking people must have journeyed across central Eurasia to reach their desert destination, Anthony says. Remains of disk wheels found in their graves suggest that these outsiders introduced carts and chariots to the Chinese, he theorizes. Elaborate chariots have been found in burials from early Chinese civilization, about 3,300 years ago, but there is no record of early stages of vehicle development in China.

Europeans may have brought horseback riding and bronze-making technology to China as well, Anthony says. Mair notes that such theories make his work politically sensitive in China, where scientists and government authorities assume their ancient culture unfolded without foreign influence.

Mair suspects that the Xinjiang corpses are ancestors of the Tocharians, who lived in China during the first millennium A.D. and were depicted in local wall paintings as red-haired, sword-wielding knights from Europe. Tocharian represents the easternmost branch of the Indo-European language family and probably emerged, at the earliest, about 3,000 years ago. It bears more resemblance to Germanic and Celtic languages in Western Europe than to branches of Indo-European in regions closer to China.

"The spread of Indo-European had something to do with southern Russian and Ukrainian steppe people getting up on horses and riding chariots," Mair remarks.

Linguist Johanna Nichols of the University of California, Berkeley, says the key to Indo-European's ascent was the periodic movement of ancestral tongues across central Eurasia, beginning around 7,000 years ago. Every few thousand years, a new language would expand westward across the arid grasslands of central Eurasia — what Nichols calls a "spread zone." These linguistic expansions, unaccompanied by any large population migration, altered the way people communicated across much of the continent.

Reconstructed family trees of various branches of Indo-European show that these ancestral tongues split immediately into a dozen or more "daughter" languages, the Berkeley researcher says. This trait signals the rapid formation of regional dialects from an original form of speech and is a hallmark of spread zones.

Linguistic evidence — much of it derived from reconstructions of extinct tongues — points to the spread across central Eurasia of a language family ancestral to proto-Indo-European, Nichols contends. Four successive spreads of Indo-European language families followed: proto-Indo-European around 5,500 years ago, Iranian about 4,000 years ago, Turkic nearly 2,000 years ago, and Mongolian between 1,500 and 1,000 years ago.

Nichols places the proto-Indo-European homeland about 2,000 miles southeast of the homeland Anthony proposes. Various regional branchings of Indo-European accompanied the four major spreads, which began at different eastern points in central Eurasia, Nichols maintains.

Eurasian peoples living to the east and toward the center of the continent inhabited sparse, dry landscapes that promoted nomadic animal herding and clan-based societies, she notes. Clans were dispersed clusters of people belonging to kinship groups presided over by a hierarchy of male rulers. Clan members were not necessarily biologically related, but they claimed a link to an ancient, often mythical ancestor.

Clans on the eastern edge of the spread zone had a military or economic edge on their neighbors, who spoke different languages, and these eastern clans fomented the major linguistic diffusions, Nichols argues.

Historical accounts, such as those describing the shift from Turkic to Mongol, indicate that these clan rulers often arranged alliances with their counterparts to the west. These agreements included a voluntary embrace by western rulers of the spreading language, she contends. A mixture of economic opportunism and military intimidation probably motivated clan leaders to accept an advancing language and its speakers' culture, Nichols suggests.

Thus, the original Indo-Europeans may have made their linguistic mark without any of the cultural innovations often ascribed to them.

"They did not bring agriculture to Europe, tame the horse, invent patriarchy and warrior cults, or initiate the Bronze Age," Nichols asserts. "They likely had a small competitive edge on other steppe societies, but the main reason why their language spread was that they happened to be in the right place at the right time."

Her scenario should be put to the test in the recently established states of central Eurasia, where archaeological research has expanded greatly in the past decade. For instance, Harvard University researchers are collaborating with archaeologists from Russia and Turkmenistan in

excavating Bronze Age settlements belonging to the Oxus civilization, which thrived on the southeastern rim of central Eurasia about 4,000 years ago. Speakers of Indo-Iranian languages may have originated in that ancient culture, according to Harvard's Fredrik T. Hiebert.

Hiebert and his coworkers make no claims that the first Indo-European speakers spawned the Oxus civilization, although it existed within the area cited by Nichols as the most likely Indo-European homeland.

A University of Pennsylvania conference planned for April 1996 will bring together scientists from around the world to discuss the origins of Indo-European peoples, particularly in light of the corpses that Victor Mair is studying. Mair knows that the meeting will not resolve all disagreements, "but perhaps we'll see a reconciliation between archaeologists and linguists." □