The Horse, the Wheel, and Language

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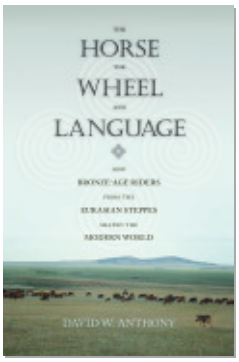

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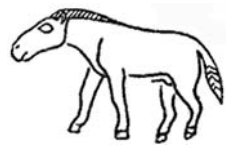

Words and Deeds

The Indo-European problem can be solved today because archaeological discoveries and advances in linguistics have eaten away at problems that remained insoluble as recently as fifteen years ago. The lifting of the Iron Curtain after 1991 made the results of steppe research more easily available to Western scholars and created new cooperative archaeological projects and radiocarbon dating programs. Linguists like Johanna Nichols, Sarah Thomason, and Terrence Kaufman came up with new ways of understanding language spread and convergence. The publication of the Khvalynsk cemetery and the Sintashta chariot burials revealed unsuspected richness in steppe prehistory. Linguistic and archaeological discoveries now converge on the probability that Proto-Indo-European was spoken in the Pontic-Caspian steppes between 4500 and 2500 BCE, and alternative possibilities are increasingly difficult to square with new evidence. Gimbutas and Mallory preceded me in arguing this case. I began this book by trying to answer questions that still bothered many reasonable observers.

One question was whether prehistoric language borders could be detected in prehistoric material culture. I suggested that they were correlated at persistent frontiers, a generally rare phenomenon that was surprisingly common among the prehistoric cultures of the Pontic-Caspian steppes. Another problem was the reluctance of Western archaeologists and the overenthusiasm of Eastern European archaeologists to use migration as an explanation for prehistoric culture change, a divergence in approach that produced Eastern interpretations that Western archaeologists would not take seriously. I introduced models from demographics, sociology, and anthropology that describe how migration works as a predictable, regular human behavior in an attempt to bring both sides to the middle. The most divisive problem was the absence of convincing evidence indicating when horse domestication and horseback riding began. Bit wear might settle the issue through the presence or absence of a clear riding-related pathology

on horse teeth. A separate but related debate swirled around the question of whether pastoral nomadism was possible as early as the Yamnaya horizon, or if it depended on later horseback riding, which in this argument only began in the Iron Age; or perhaps it depended on state economies, which also appeared on the steppe border during the Iron Age. The Samara Valley Project examined the botanical and seasonal aspects of a Bronze Age steppe pastoral economy and found that it did not rely on cultivated grain even in year-round permanent settlements. Steppe pastoralism was entirely self-sustaining and independent in the Bronze Age; wild seed plants were plentiful, and wild seeds were eaten where grain was not cultivated. Pastoral nomadism did not depend for its food supply on Iron Age states. Finally, the narrative culture history of the western steppes was impenetrable to most Western linguists and archaeologists. Much of this book is devoted to my efforts to cut a path through the tangle of arguments about chronology, culture groups, origins, migrations, and influences. I have tried to reduce my areas of ignorance about steppe archaeology, but am mindful of the few years I spent doing federally funded archaeology in Massachusetts, less than half the size of the single Samara oblast on the Volga, and how we all thought it an impossible task to try to learn the archaeology of Massachusetts *and* neighboring Rhode Island—one-tenth the size of Samara oblast. Nevertheless, I have found a path that makes sense through what I have read and seen. Debate will continue on all these subjects, but I sense that a chord is emerging from the different notes.

The Horse and the Wheel

Innovations in transportation technology are among the most powerful causes of change in human social and political life. The introduction of the private automobile created suburbs, malls, and superhighways; transformed heavy industry; generated a vast market for oil; polluted the atmosphere; scattered families across the map; provided a rolling, heated space in which young people could escape and have sex; and fashioned a powerful new way to express personal status and identity. The beginning of horseback riding, the invention of the heavy wagon and cart, and the development of the spoke-wheeled chariot had cumulative effects that unfolded more slowly but eventually were equally profound. One of those effects was to transform Eurasia from a series of unconnected cultures into a single interacting system. How that happened is a principal focus of this book.

Most historians think of war when they begin to list the changes caused by horseback riding and the earliest wheeled vehicles. But horses were first

domesticated by people who thought of them as food. They were a cheap source of winter meat; they could feed themselves through the steppe winter, when cattle and sheep needed to be supplied with water and fodder. After people were familiar with horses as domesticated animals, perhaps after a relatively docile male bloodline was established, someone found a particularly submissive horse and rode on it, perhaps as a joke. But riding soon found its first serious use in the management of herds of domesticated cattle, sheep, and horses. In this capacity alone it was an important improvement that enabled fewer people to manage larger herds and move them more efficiently, something that really mattered in a world where domesticated animals were the principal source of food and clothing. By 4800–4600 BCE horses were included with obviously domesticated animals in human funeral rituals at Khvalysnk on the middle Volga.

By about 4200–4000 BCE people living in the Pontic-Caspian steppes probably were beginning to ride horses to advance to and retreat from raids. Once they began to ride, there was nothing to prevent them from riding into tribal conflicts. Organic bits functioned perfectly well, Eneolithic steppe horses were big enough to ride (13–14 hands), and the leaders of steppe tribes began to carry stone maces as soon as they began to keep herds of cattle and sheep, around 5200–4800 BCE. By 4200 BCE people had become more mobile, their single graves emphasized individual status and personal glory unlike the older communal funerals, high-status graves contained stone maces shaped like horse heads and other weapons, and raiding parties migrated hundreds of kilometers to enrich themselves with Balkan copper, which they traded or gifted back to their relatives in the Dnieper-Azov steppes. The collapse of Old Europe about 4200–4000 BCE probably was at least partly their doing.

The relationship between mounted steppe pastoralists and sedentary agricultural societies has usually been seen by historians as either violent, like the Suvorovo confrontation with Old Europe, or parasitic, or both. "Barbaric" pastoral societies, hungry for grain, metals, and wealth, none of which they could produce themselves, preyed upon their "civilized" neighbors, without whom they could not survive. But these ideas are inaccurate and incomplete even for the historical period, as the Soviet ethnographer Sergei Vainshtein, the Western historian Nicola DiCosmo, and our own botanical studies have shown. Pastoralism produced plenty of food—the average nomad probably ate better than the average agricultural peasant in Medieval China or Europe. Steppe miners and craftsmen mined their own abundant ores and made their own metal tools and weapons; in fact, the enormous copper mines of Russia and Kazakhstan and the tin mines

of the Zeravshan show that the Bronze Age civilizations of the Near East depended on *them*. For the prehistoric era covered in this book, any model based on relationships between the militarized nomads of the steppes and the medieval civilizations of China or Persia is anachronistic. Although the steppe societies of the Suvorovo-Novodanilovka period did seem to prey upon their neighbors in the lower Danube valley, they were clearly more integrated and apparently had peaceful relationships with their Cucuteni-Tripolye neighbors at the same time. Maikop traders seem to have visited steppe settlements on the lower Don and even perhaps brought weavers there. The institutions that regulated peaceful exchange and cross-cultural relationships were just as important as the institution of the raid.

The reconstructed Proto-Indo-European vocabulary and comparative Indo-European mythology reveal what two of those important integrative institutions were: the oath-bound relationship between patrons and clients, which regulated the reciprocal obligations between the strong and the weak, between gods and humans; and the guest-host relationship, which extended these and other protections to people outside the ordinary social circle. The first institution, legalizing inequality, probably was very old, going back to the initial acceptance of the herding economy, about 5200–5000 BCE, and the first appearance of pronounced differences in wealth. The second might have developed to regulate migrations into unregulated geographic and social space at the beginning of the Yamnaya horizon.

When wheeled vehicles were introduced into the steppes, probably about 3300 BCE, they again found their first use in the herding economy. Early wagons and carts were slow, solid-wheeled vehicles probably pulled by oxen and covered by arched roofs made of reed mats plaited together, perhaps originally attached to a felt backing. Yamnaya-era graves often contain remnants of reed mats with other decayed organic material. On some occasions the mats were painted in red, black, and white stripes and curved designs, certainly at funerals. Wagons permitted herders to migrate with their herds into the deep steppes between the river valleys for weeks or months at a time, relying on the tents, food, and water carried in their wagons. Even if the normal annual range of movement was less than 50 km, which seems likely for Yamnaya herders, the combination of bulk wagon transport with rapid horseback transport revolutionized steppe economies, opening the majority of the Eurasian steppe zone to efficient exploitation. The steppes, largely wild and unused before, were domesticated. The Yamnaya horizon exploded across the Pontic-Caspian steppes about 3300 BCE. With it probably went Proto-Indo-European, its dialects

scattering as its speakers moved apart, their migrations sowing the seeds of Germanic, Baltic, Slavic, Italic, Celtic, Armenian, and Phrygian.

The chariot, the first wheeled vehicle designed entirely for speed, first appeared in the graves of the Sintashta culture, in the southern Ural steppes, about 2100 BCE. It was meant to intimidate. A chariot was incredibly difficult to build, a marvel of carpentry and bent-wood joinery. It required a specially trained team of fast, strong horses. To drive it through a turn, you had to rein each horse independently while keeping a backless, bouncing car level by leaning your weight into each bounce. It was even more difficult to throw a javelin accurately at a target while driving a speeding chariot, but the evidence from the Sintashta chariot graves suggests that this is precisely what they did. Only men with a lot of time and resources, as well as balance and courage, could learn to fight from a chariot. When a squadron of javelin-hurling chariot warriors wheeled onto the field of battle, supported by clients and supporters on foot and horseback with axes, spears, and daggers, it was a new, lethal style of fighting that had never been seen before, something that even urban kings soon learned to admire.

This heroic world of chariot-driving warriors was dimly remembered in the poetry of the *Iliad* and the *Rig Veda*. It was introduced to the civilizations of Central Asia and Iran about 2100 BCE, when exotic Sintashta or Petrovka strangers first appeared on the banks of the Zeravshan, probably bouncing along on the backs of the new kinds of equids from the north. At first, this odd way of moving around probably was amusing to the local people of Sarazm and Zaman Baba. Very soon, however, both places were abandoned. Between 2000 and 1800 BCE first Petrovka and then Alakul-Andronovo groups settled in the Zeravshan valley and began mining copper and tin. Horses and chariots appeared across the Near East, and the warfare of cities became dependent, for the first time, on well-trained horses. The Old Indic religion probably emerged among northern-derived immigrants in the contact zone between the Zeravshan and Iran as a syncretic mixture of old Central Asian and new Indo-European elements. From this time forward the people of the Eurasian steppes remained directly connected with the civilizations of Central Asia, South Asia, and Iran, and, through intermediaries, with China. The arid lands that occupied the center of the Eurasian continent began to play a role in transcontinental economies and politics.

Jared Diamond, in *Guns, Germs, and Steel*, suggested that the cultures of Eurasia enjoyed an environmental advantage over those of Africa or the Americas partly because the Eurasian continent is oriented in an east-west direction, making it easier for innovations like farming, herding, and

wheeled vehicles to spread rapidly between environments that were basically similar because they were on about the same latitude.[1] But persistent cultural borders like the Ural frontier delayed the transmission of those innovations by thousands of years even within the single ecological zone of the steppes. A herding economy was accepted on the middle Ural River, near the headwaters of the Samara River, by 4800 BCE. Hunters and gatherers in the neighboring steppes of northern Kazakhstan, at the same latitude, refused domesticated cattle and sheep for the next two thousand years (although they did begin to ride horses by 3700–3500 BCE). The potential geographic advantage Diamond described was frustrated for millennia, not a short time, by human distrust of foreign ways of doing things and admiration for the familiar ways. This tendency was hyperdeveloped when two very different cultures were brought into contact through long-distance migrations or at an ecological border. In the case of the Ural frontier, the Khvalynian Sea separated the populations east and west of the Ural Mountains for millennia, and the saline desert-steppe that replaced it (chapter 8) probably remained a significant ecological barrier for pedestrian foragers. Places like the Ural River frontier became borders where deep-rooted, intransigent traditions of opposition persisted.

These long-lasting, robust kinds of frontiers seem to have been rare in the prehistoric world of tribal politics. We have grown accustomed to them now only because the modern nation-state has made it the standard kind of border everywhere around the world, encouraging patriotism, jingoism, and the suspicion of other nations across sharply defined boundaries. In the tribal past, the long-term survival of sharp, bundled oppositions was unusual. The Pontic-Caspian steppes, however, witnessed an unusual number of persistent tribal frontiers because sharp environmental ecotones ran across it and it had a complex history of long-distance migrations, two important factors in the creation and maintenance of such frontiers.

Archaeology and Language

Indo-European languages replaced non–Indo-European languages in a multi-staged, uneven process that continues today, with the worldwide spread of English. No single factor explains every event in that complicated and drawn-out history—not race, demographics, population pressure, or imagined spiritual qualities. The three most important steps in the spread of Indo-European languages in the last two thousand years were the rise of the Latin-speaking Roman Empire (an event almost prevented by Hannibal); the expansion of Spanish, English, Russian, and French

colonial powers in Asia, America, and Africa; and the recent triumph of the English-speaking Western capitalist trade system, in which American-business English has piggybacked onto British-colonial English. No historian would suggest that these events shared a single root cause. If we can draw any lessons about language expansion from them, it is perhaps only that an initial expansion can make later expansions easier (the *lingua franca* effect), and that language generally follows military and economic power (the *elite dominance* effect, so named by Renfrew). The earliest Indo-European expansions described in this book laid a foundation of sorts for later expansions by increasing the territorial extent of the Indo-European languages, but their continued spread never was inevitable, and each expansion had its own local causes and effects. These local events are much more important and meaningful than any imagined spiritual cause.

It is not likely that the initial spread of the Proto-Indo-European dialects into regions outside the Pontic-Caspian steppes was caused primarily by an organized invasion or a series of military conquests. As I suggested in chapter 14, the initial spread of Proto-Indo-European dialects probably was more like a franchising operation than an invasion. At least a few steppe chiefs must have moved into each new region, and their initial arrival might well have been accompanied by cattle raiding and violence. But equally important to their ultimate success were the advantages they enjoyed in institutions (patron-client systems and guest-host agreements that incorporated outsiders as individuals with rights and protections) and perhaps in the public performances associated with Indo-European rituals. Their social system was maintained by myths, rituals, and institutions that were adopted by others, along with the poetic language that conveyed their prayers to the gods and ancestors. Long after the genetic imprint of the original immigrant chiefs faded away, the system of alliances, obligations, myths, and rituals that they introduced was still being passed on from generation to generation. Ultimately the last remnant of this inheritance is the expanding echo of a once-shared language that survives as the Indo-European language family.

Understanding the people who lived before us is difficult, particularly the people who lived in the prehistoric tribal past. Archaeology throws a bright light on some aspects of their lives but leaves much in the dark. Historical linguistics can illuminate a few of those dark corners. But the combination of prehistoric archaeology with historical linguistics has a bad history. The opportunities for imaginative fantasies of many kinds, both innocent and malevolent, seem dangerously increased when these two very different kinds of evidence are mixed. There is no way to stop

that from happening—as Eric Hobsbawm once remarked, historians are doomed to provide the raw material for bigotry and nationalism.[2] But he did not let that stop him from doing history.

For Indo-European archaeology, the errors of the past cannot be repeated as easily today. When the nineteenth-century fantasy of the Aryans began there were no material remains, no archaeological findings, to constrain the imagination. The Aryans of Madison Grant were concocted from sparse linguistic evidence (and even that was twisted to his purpose), a large dose of racism, a cover of ideals derived from the Classical literature of Greece and Rome, and the grim zero-sum politics of social Darwinism. Archaeology really played no role. The scattered archaeological discoveries of the first half of the twentieth century could still be forced into this previously established imaginary mold. But that is not so easy today. A convincing narrative about the speakers of Proto-Indo-European must today be pegged to a vast array of archaeological facts, and it must remain un-contradicted by the facts that stand outside the chosen narrative path. I have used a lot of archaeological detail in this account, because the more places a narrative is pegged to the facts, and the more different kinds of facts from different sources are employed as pegs, the less likely it is that the narrative is false. As both the density of the archaeological facts and the quality of the linguistic evidence improve, advances in each field should act as independent checks on the worst abuses. Although I have used linguistic reconstructions for which there is little direct archaeological evidence (importantly patron-client and guest-host relationships), at least both would be compatible with the kinds of societies indicated by the archaeological evidence.

On the positive side, the combination of archaeological evidence and the reconstructed Proto-Indo-European vocabulary can reveal entirely new kinds of information about the prehistoric past. That promise keeps pushing the project forward both for linguists and archaeologists. At many critical points the interpretations presented here have been guided by institutions, rituals, and words that I found in reconstructed Indo-European and applied to archaeological settings. But I have barely scratched the surface of what might be accomplished by pulling material out of Proto-Indo-European and using it as a lens through which to examine archaeological evidence. Reciprocally, archaeological data add real-life complexities and contradictions to the idealized Indo-European social world of the linguists. We might not be able to retrieve the names or the personal accomplishments of the Yamnaya chiefs who migrated into the Danube valley around 3000 BCE, but, with the help of reconstructed

Proto-Indo-European language and mythology, we can say something about their values, religious beliefs, initiation rituals, kinship systems, and the political ideals they admired. Similarly, when we try to understand the personal, human motivation for the enormous animal sacrifices that accompanied the funerals of Sintashta chiefs around 2000 BCE, reading the *Rig Veda* gives us a new way of understanding the value attached to public generosity (RV 10.117):

> That man is no friend who does not give of his own nourishment to his friend, the companion at his side. Let the friend turn away from him; this is not his dwelling-place. Let him find another man who gives freely, even if he be a stranger. Let the stronger man give to the man whose need is greater; let him gaze upon the lengthening path. For riches roll like the wheels of a chariot, turning from one to another.[3]

Archaeologists are conscious of many historical ironies: wooden structures are preserved by burning, garbage pits survive longer than temples and palaces, and the decay of metals leads to the preservation of textiles buried with them. But there is another irony rarely appreciated: that in the invisible and fleeting sounds of our speech we preserve for a future generation of linguists many details of our present world.