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## The Problem of Tocharian Origins: An Archaeological Perspective

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# The Problem of Tocharian Origins: An Archaeological Perspective<sup>1</sup>

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This study explores the problem of Tocharian origins in a series of stages, beginning with the archaeological identification of the historical Tocharians, the immediate antecedents of the historical Tocharians, the potential for identifying a source for the Tocharian languages outside the Tarim Basin, and, finally, how proposed external origins might accommodate some of the various models of Indo-European expansion. The material culture that may be assigned to the proto-Tocharians on the basis of lexical-cultural analysis is also evaluated against the archaeological record of Xinjiang and adjacent regions.

The earliest written records of Xinjiang or Eastern Turkestan exhibit an amazing variety of Indo-European languages whose origins lay farther to the west. Most of these languages appear to have been carried eastward within the context of the trade relations and religious proselytizing associated with the Silk Road, e.g., Sogdian, Gāndhārī Prakrit, Buddhist (Hybrid) Sanskrit — all members of the Indo-Iranian subfamily and all appearing in the Tarim Basin in the first millennium CE (Foltz 2010). In

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<sup>1</sup> First I would like to thank Alison Betts who invited me to the workshop “East and West: Past and Future” at the Chinese Studies Centre, University of Sydney, 2012, where this paper was originally presented. I would also like to thank D. Q. Adams who commented on an earlier draft of this paper and provided access to entries from the revised version of his etymological dictionary of Tokharian B; thanks also to Asko Parpola who showed me a copy of his most recent paper in advance of publication; thanks to Svetlana Syvatko, Nadezhda Dubova and Alexei Kovalev for supplying me with extremely useful Russian-language publications; and thanks to Thomas Benfey for his work on the sources of Tocharian B.

contrast, there are representatives of two major branches of Indo-European that indicate an earlier occupation of the region. Khotanese Saka, an Iranian language, is primarily known from the southwestern quarter of the Tarim Basin, particularly in and around Khotan, and the closely related Tumshuq Saka found to the north, along the lower courses of the Kashgar River (Hitch 2009, 5) (Fig. 1). In determining the origins of the Saka branch of Iranian, there has been at least a sense that a general outline can be constructed in which both the linguistic and archaeological evidence seem to accord with one another. Saka is an Eastern Iranian language whose closest relations include Avestan, Sogdian and Bactrian, all of which are well anchored to the west of the Tarim Basin, as are also the ancient people known to the Persians as the Saka. Archaeologically, these Saka are generally seen to be equivalent to the Scythians of the Eurasian steppelands ("the Persians call all Scythians Saka," Herodotus vii, 62, 2), where we have abundant remains, at least of Saka/Scythian burials, from the Black Sea to the Yenisei and Altai (Yablonsky 1995). Burials comparable with those of the steppelands have been recovered from Xinjiang, e.g., Zhongyangchang in the Tianshan or Tängri Tagh, and Saka burials and material culture have been found at Yumulak Kum (Yuansha) on the Keriya dating back as early as the seventh century BCE (Debaine-Francfort and Idriss 2001). While one can dispute the precise path of the Saka into the Tarim Basin (Altai>Jungghar Basin>Tarim Basin or Pamirs>Tarim Basin) there is at least a sense that this is a manageable problem for archaeologists.

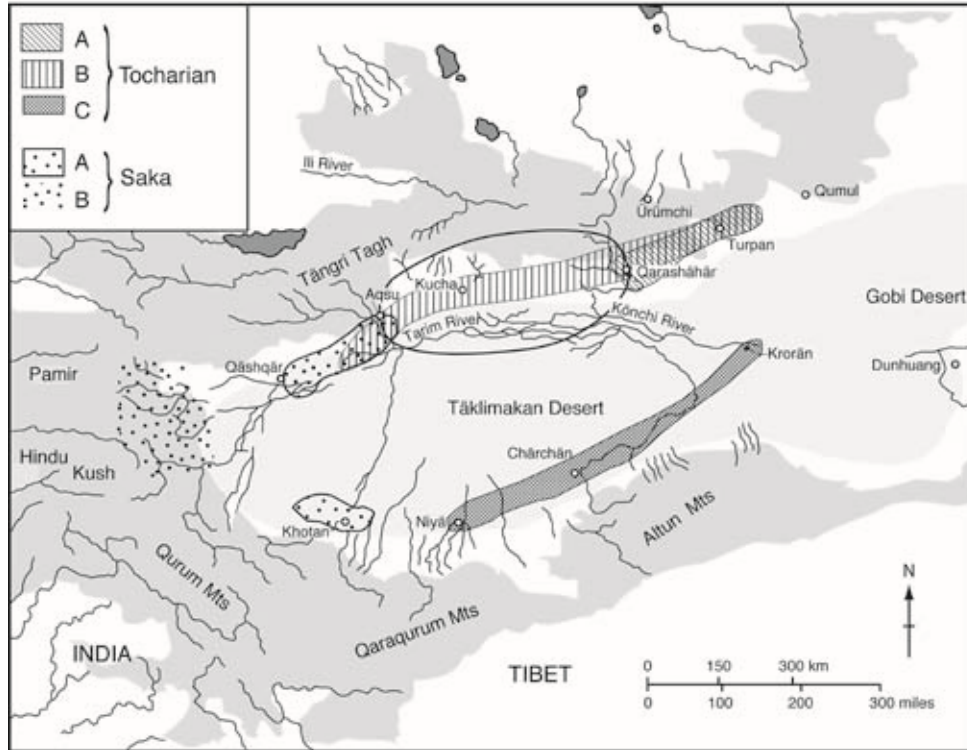


Figure 1. Distribution of Tocharian and Iranian languages in the Tarim Basin.

On the other hand, the second branch of Indo-European represented in the Tarim Basin, Tocharian, poses far greater difficulties than does its distantly related Iranian kinsmen. First, unlike the Saka, the Tocharians do not have closely related siblings outside the Tarim Basin. We lack the type of anchors (both linguistic and archaeological) that we can employ to position the immediate ancestors of the Saka. Second, we do not even possess an effective Tocharian archaeology within the Tarim Basin itself. The people who left us Tocharian documents had assimilated their native culture to urbanism and Buddhism and, while they are depicted in glorious detail on the walls of cave shrines, they are portrayed either as Buddhist monks in Indian dress or as warriors in Sassanian clothing. We can tell that they were Europoids in the physical sense but little more. Determining the origins of the Tocharians on the basis of such evidence is a little like trying to discern the origins of the Japanese from the images depicted on their baseball cards.

Despite all these problems, there are, nevertheless, numerous “solutions” to the problem of Tocharian origins. Evaluating these is often difficult and, from an archaeological perspective, frequently frustrating, and it is not my intention to review the history of the search for Tocharian origins (see Sverchkov 2012, 11–29 / Сверхков 2012, 11–29) nor evaluate those solutions that rest

entirely on a narrow linguistic analysis of some ethnonyms, e.g., the hypothesis that the Kucheans and Tocharians are to be equated with the Guti and Tukri of Mesopotamia (Henning 1935; Gamkrelidze and Ivanov 2006; see also Blažek and Schwartz 2008, 59–60), where there is no accompanying archaeological evidence adduced. Rather, after introducing the Tocharians I will examine the types of solution that would, on the one hand, not do too much violence to the (often contentious) propositions of linguists and, on the other hand, be along lines that an archaeologist might find acceptable.

### **The Tocharian Languages**

Our knowledge of the Tocharian languages derives essentially from c. 7600 documents found across about thirty sites in the eastern half of the greater Tarim Basin (Fig. 1). The documents date from c. 400 to 1200 CE (Adams 2006, 382) and are divided into two major languages, Tocharian A (=TA or Agnean) and Tocharian B (=TB or Kuchean), the latter subdivided variously into three regional dialects or, more likely, two dialects and several different palaeographical/linguistic stages (Malzahn 2007). The number of Tocharian A documents that have been studied is about 500, while over 3200 Tocharian B documents have been examined in detail (Blažek and Schwarz 2008). The overwhelming majority of documents are the product of Buddhist monasteries and consist primarily of devotional documents, dramas and treatises on magic, almost all of which are translations of Indian manuscripts. In addition there are monastic administrative works and some secular documents such as caravan passes. While the number of documents is substantial, they are almost all fragmentary to a greater or lesser extent and thus would produce a "running text" much smaller than the overall numbers might suggest.

The distribution of Tocharian (AB) documents extends from Akesu/Aqsu east to the Turpan oasis, with distant outliers at Dunhuang in Gansu and an early TB manuscript found at Endere on the southern branch of the Silk Road (Malzahn 2007, 278). We should be a bit wary of assuming that the location of the manuscripts equates with the total distribution of Tocharian speakers since liturgical documents, composed or copied in monasteries, may far exceed the natural range of the vernacular language. The earliest surviving documents in Old Irish (eighth century or earlier), for example, are primarily found in Germany, Switzerland and Italy and not in Ireland itself. As with the Tocharian

documents their place of discovery reflects the activity of Irish monks who traveled great distances at about the same time as their distant Buddhist linguistic cousins in the east. Tocharian documents at Dunhuang or Endere, for example, cannot demonstrate that Tocharian was actually spoken by the people of those regions, and it has even been suggested that Tocharian A may not have been the language of the people around Qarashähär (Walter 1998, 18), although Malzahn (2007, 290) shows that two examples of monastery records and other works in TA from Xorchuq indicate that TA was at least spoken and was not merely a dead liturgical language. We are caught in a logical bind here because of the very limited nature of our evidence. For example, Walter (1998, 18) suggests that "the vernacular language of the Qarashähär region was different from the church-language (Tocharian A)," and the only evidence to the contrary is circumstantial, e.g., the people of Kucha and those further east in Qarashähär may have spoken the same language because Chinese sources found the cultural practices between the two towns similar (M. Liu 1969: 8–9), although it should also be recalled that there were, in addition, close political connections between the two towns.

But, if the population around Qarashähär was not speaking Tocharian, what language was it speaking? All of the other possible candidates (Gāndhārī Prakrit, Sogdian, etc.) seem even less likely to have been the vernacular language of the indigenous population, and, while it is always possible to speculate that Burushaski-speakers managed to settle within the Tarim Basin (Jettmar 1996, 38), there is absolutely no evidence that this happened. The only documents that are not confined to a religious context are the caravan passes, which presuppose a wider Tocharian reading public, and these are found essentially in the region of Kucha. If we had to identify a core area of a demonstrably Tocharian-speaking region, the choice would probably fall between Kucha and Xorchuq/Qigexing (modern Yanqi). Obviously, as we do not find other secular documents to the east that are not in one of the more recently "imported" languages, we can certainly assume that populations in, for example, the Turpan Basin and elsewhere must have spoken their own vernacular, which might very well have been Tocharian; we cannot, unfortunately, actually demonstrate this. The concept of a Tocharian core area (Fig. 1), however, may be of some use when we search for archaeological correlations, discussed below.

Tocharian B offers the largest vocabulary: in the first edition of Doug Adam's etymological dictionary (Adams 1999), over 2560 words are treated, of which 58% have been analysed as potentially

derived directly from Indo-European. The rest of the vocabulary consists of loanwords, principally Buddhist Hybrid Sanskrit (37%) with traces from other Indo-Iranian languages (Middle Indic [Pali, various Prakrits], Sogdian, Khotanese, undetermined Middle Iranian), as well as a few loanwords from Greek, Chinese and Uyghur. About 2% of the vocabulary has no known etymology, although the percentage of words with insecure etymologies is certainly considerably higher; Xavier Tremblay (2005, 422) suggested that a significant amount of Adams's "inherited" Indo-European vocabulary may actually be Iranian loans.

In addition to the two directly documented Tocharian languages, many scholars also recognize a third variant, Tocharian C (=TC), that is attested in third century CE Indic (Gāndhārī Prakrit, written in the Kharoṣṭhī script) documents from the region between Kroraina and Niya. T. Burrow (1937, viii; also 1935) designated this element Krorainic. It consists of over a thousand personal names and about one hundred other words that cannot be ascribed to Indic. He assigned the language to the natives of the kingdom of Kroraina and indicated that they had a major influence on the articulation of Gāndhārī Prakrit in Kroraina (absence of voiced stops and aspirates, which is consistent with the two Tocharian languages). Direct correspondences with the two literary Tocharian languages are extremely few, and Burrow offered five examples as among "the most certain." The words are administrative, e.g., *kilme* 'district', *kitsaitsa* 'an official title (elder?)', *ṣoṣṭhaṅga* 'tax-collector', *ṣilpoga* 'document' and an epithet pertaining to a camel, *amklatsa*, along with some personal names that can be analyzed as Tocharian. In Burrow's study the native language of Kroraina-Niya was then likely to have been a language belonging to the Tocharian branch of Indo-European languages. This theory has been widely accepted (e.g., Altheim and Stiehl 1970, 714; Lin 1992, 91–92; Xu 1996, 9; Pinault 1989, 10; Carling 2005, 47), although Hitch rightly cautions that, although it is seventy-five years since the Tocharian C hypothesis was suggested, "this proposal has neither been confirmed nor disproved" (Hitch 2009, 5). Among those who have not concluded that the Kroraina substrate was Tocharian are Frederick William Thomas and Heinrich Lüders, who attributed the Krorainic substrate to either Tibetan-Burman or some pre-Chinese/Tibetan language spoken between Gansu and western Tibet. In a seminar on the subject of Tocharian C, Giorgio Banti (2000) reviewed the evidence for assigning the Krorainic elements in the documents to Tocharian, and he concluded that the similarities between the documented Tocharian languages and Krorainic are best explained as



deriving from "a third language or language group that caused them to lose voiced stops, to develop group inflection, palatalisations, etc." The hypothesis of a Tocharian C has major implications for any type of archaeological solution to the problem of Tocharian origins (see below), and one can only hope that a competent linguist will soon revisit this material.

### **The Prehistoric Date of Tocharian**

All languages exist in both space and time, and before one can even pose the question of where the Tocharian languages came from, one needs to establish how early Tocharian may have been spoken in Xinjiang. While we have the physical evidence of "Westerners" in the Tarim Basin from c. 2000 BCE onwards (Mallory and Mair 2000), we cannot automatically presume that these were the ancestors of the historical Tocharians without knowing when the language was established. There are a variety of attempts at dating the Tocharian languages that may be indicative but are hardly conclusive.

The relationship between Tocharian A and Tocharian B is explained as the divergence of two related languages from a common ancestor, Common or Proto-Tocharian. While the two languages belonged to the same branch, they were mutually unintelligible, at least as much as modern Germanic or Romance languages, and possessed considerable differences in even their most basic vocabulary (Lane 1966, 222–223). Moreover, as has long been recognized, they also differ in the technical vocabulary relating to Buddhism, so that it is safe to conclude that they were already different languages before their speakers adopted Buddhism (Lane 1966, 221; Pinault 2002, 245), some time around the first century CE. Generally, we find many linguists offering roughly similar approximations of the time depth of their separation. George Lane estimated that the period of independent development was on the order of 500 to 1000 years and certainly no less than 500 (Lane 1966, 232). If we set the historical date of the earliest attested Tocharian manuscripts to c. 400 CE (and not the sixth century, as was probably presupposed by most earlier estimates), Lane's estimate might be interpreted as c. 600–100 BCE. Donald Ringe (1995, 439) estimated Proto-Tocharian at about "a millennium or so before the date of our earliest documents," so again about 600 BCE. Georges-Jean Pinault (2002, 245) also estimated about five centuries and, more recently, Gerd Carling (2004, 61) suggests a similar date with, perhaps, one of the most recent loans being the Skt *buddha-* (*\*put* > *\*pat* >

TA *ptāñkät*, TB *pañäkte*). Employing glottochronology, Blažek and Schwartz (2008) have proposed a date of c. 400 BCE for the divergence of the two Tocharian languages (see also Lubotsky 1998, 380, which sets Proto-Tocharian no earlier than the fourth century BC). The only Tocharian specialist to advance an earlier date is Douglas Adams (2006, 388) who suggests that the dissolution of Proto-Tocharian could have occurred "in the mid to late second millennium BC." This earlier date has some support since we can "test" what about 500 years of separation might look like by comparing the differences between Albanian (as spoken in Albania) and the language where it was brought to Italy, and even after five hundred years of total separation, they are still more similar to one another than the two Tocharian languages (Adams pers. comm.).

These estimated dates of separation can only be applied to Tocharian A and B but do not take into account Tocharian C (which we will assume to be related). We cannot say how closely Tocharian C was related to the other two languages but, given its greater geographical separation from the other two Tocharian languages (which might suggest an even earlier split), the evidence suggests that we are dealing with another mutually unintelligible Tocharian language dating well from before the first centuries BCE.

For the presence of the Tocharians in the vicinity of China as a whole our evidence is meager. For example, a date of at least the third century BCE can be entertained if we accept that Old Chinese *\*myet* 'honey' is a loan from Tocharian (TB *mit*) (Winter 1984, 23). If one accepts Lubotsky's (1998) proposal that a number of terms associated with chariots in Chinese are Tocharian loans, then the potential date for contact could be much earlier (Shang dynasty).

The probable mechanism for the dissolution of Common Tocharian is a spatial separation over time, i.e., the ancestors of the different languages lost contact with one another over a protracted period. There are two basic models that one could propose to account for this fragmentation.

1. Common Tocharian spread along the northern Silk Road and eventually divided into western and eastern groups during the first millennium BCE or, perhaps, somewhat earlier; it also spread further to the south to be later integrated into the administrative language of the capital city of Kroran (or Loulan) from whence it was carried westwards towards Niya. From a spatial perspective this would certainly be a large enough region to prompt linguistic

diversification between TA/TB and the southern TC from a single Common Tocharian. But the split between TA and TB is a little harder to justify, as one might well have expected a linguistic continuum along the northern oasis towns of the Silk Road without the major differences between TA and TB. Indeed, on other grounds, Werner Winter (1984, 13) suggested that the presence of TA documents in Turpan and Qarashähär should be attributed to the Turks, and that the "homeland" of TA should lie somewhere between the Turks and Tocharian B (Jungghar Basin?).

2. Common Tocharian existed outside the Tarim Basin during the first millennium BC, and the languages, already differentiated, entered the Tarim Basin, possibly at different times and with somewhat different material culture (Sverchkov 2012, 124, 186 / Сверчков 2012, 124, 186), from two different but related cultures (Kleyn 2000, 183 / Клейн 2000, 183), or following two different routes, a southern route through Iran and south Central Asia and another across the steppes of northern Eurasia (Grigoriev 2002, 231–232). Such hypotheses seem to compound the complexity of the explanation, i.e., they must first propose a region in which Common Tocharian can form, then divide into the two or three divisions we find in the Tarim Basin, and then they require that each group moved into its historical seat. The plausibility of this model is distance-dependent: the further the migration, the less likely that all three languages would remain separated linguistically and still arrive in adjacent areas. For example, one might ground such a model with a starting point in the Jungghar Basin, but it seems increasingly less plausible the farther away one places the area of differentiation.

Both geographically and temporally, then, we may expect that Common Tocharian was probably spoken sometime at least around the middle of the first millennium BCE or, indeed, up to a millennium earlier, generally in the north central and eastern reaches of the Tarim Basin. It may have been spoken beyond this region, especially in the case of TA, but without written evidence this is nearly impossible to establish. How much earlier it could have been spoken in the Tarim Basin is examined below.

## Types of Solutions

The minimum requirement for any type of archaeological solution to Tocharian origins would seem to require us:

1. To establish the physical and cultural remains of known historical Tocharian-speaking peoples;
2. To trace the physical and cultural remains of historical Tocharians retrospectively into the prehistoric period;
3. To trace the ancestors of the "prehistoric Tocharians" to a location outside of Xinjiang;
4. To trace the cultural path of the Proto-Tocharians back to a geographical source congruent with their position (temporal and spatial) within the Indo-European language family. Tocharian origins is merely a segment of a much larger jigsaw puzzle, and any solution advanced must somehow also join with the other parts of the puzzle (my "total distribution principle," Mallory 1997; see also Mair 1998, 837).

It should be emphasized that this need not be a simple cultural progression or, in this case, regression of a single population group through time, but may well involve instances of language shift that can greatly complicate issues. I will begin my analysis with the first two requirements.

## The Historical Tocharians

The first two goals require us to establish the archaeology of the historical Tocharians and then retrospectively follow them into the prehistoric record. Both the quantity and structure of our evidence makes both these goals extremely difficult to attain. Although we possess some urban remains around Turpan (Gaochang) and the old Jushi capital at Yarghul (Jiaohe) and, of course, the settlement of Niya (which can only be tied to a putative TC at best), urbanized Tocharians will obviously have shed much of their earlier cultural roots. It is questionable that, even if we possessed ample evidence for the occupants of the Tocharian-speaking towns, we would have much more of an archaeological handle than we have on the Buddhist cave art. Sites such as Qizil, for example, provide abundant evidence for artwork contemporary with the oasis towns from the third to eighth century, but almost all of the art could be assigned to external artistic traditions, Indo-Hellenic or Iranian. Only

the depiction of mourners mutilating themselves has been linked to native Central Asian behavior (Walter 1998, 25), and this is hardly specifically Tocharian, as Chinese historical sources attribute the very same practice to the Saka population of Khotan (Mallory and Mair 2000, 79), while some of the dress has been linked to roughly contemporary fashions elsewhere (Jäger 1998).

We also have Chinese sources describing the peoples of the towns that we believe were occupied, at least partly, by Tocharian speakers. If we take our archetypal Tocharian town, Kucha, as an example, although Chinese sources began recording the names of its rulers from 65 BCE, they only begin describing the cultural practices of the town from the third century CE onwards, and by this time the adoption of Buddhism and the absorption of "western" (Indo-Greek, etc.) practices were already well established. Very little of the descriptions of the population of Kucha, conveniently gathered together by Liu (M. Liu 1969, 8–11, 115–209), provide us with even a glimmer of a cultural trail that we can follow. These inform us that the population was engaged in agriculture and stockbreeding; lived in houses and not tents like nomads; had marriage practices similar to that of China; cremated their dead (a Buddhist practice that breaks with all earlier burial practices); cut the hair of both men and women so that it hung down to the neck, with the exception that the king did not cut his hair and bound his head with a band (this may be seen depicted in the Maya cave at Qizil but the practice may not be exclusively Tocharian as the King of Khotan never permitted anyone to see his hair); deformed the head of an infant by pressing it against a hard cradleboard so as to create an aesthetic skull shape (at least in the seventh century); kitted out soldiers (in the fourth century) with bows, long spears, chain mail and lassos; and included in their New Year festival animal fights between cattle, horses, camels and sheep, a practice which is believed to have derived from Iran.

One more potential starting point for Tocharian origins involves some form of identification with an ethnic group mentioned in early Chinese historical sources that is rarely if ever securely anchored in archaeology. These arguments are constructed on a paradigm that usually involves Chinese historical sources coupled in many instances with equations made with Greek, Latin or Near Eastern sources. The most robust or durable of these concerns the Yuezhi (Benjamin 2007), who immigrated/fled from Gansu, first to the Ili Valley and then further west where they founded the Kushan empire. They have frequently been equated with the Tocharians, most certainly in Bactria and, more controversially, in western China. The association of the Yuezhi and the Tocharian languages

relies heavily on ethnonymic evidence, e.g., Yuezhi may be phonetically equivalent with Kucha (Nahrain 2000, 7), the historical location of the Yuezhi (in Chinese sources) corresponds to the location of tribes recorded in Greek and other sources (Θογαρ, Toḡar, Tuḡār, etc.) that are derived from some form of *\*tukre-*, which we may presume was at least one of the names that Tocharian speakers called themselves (Adams 2000; Benjamin 2007, 21–22). This results in whole narratives that reference the Yuezhi and Tocharians (=speakers of the Tocharian languages and not merely the ethnic group associated with the Kushans in Bactria) in western China and Xinjiang as synonymous, e.g., Nahrain 2000; Benjamin 2007. There are so many minutiae involved here regarding both historical and linguistic details (see, especially, Yu 2010) that it often obscures rather than demonstrates that such evidence can actually provide information that we can regard as archaeologically useful. Here I wish only to reduce all of the arguments that I have encountered into a series of critical points that affect any use of the Yuezhi-Tocharian equation in resolving the problem of Tocharian origins.

1. The structure of any identification of the Yuezhi with the Tocharians may take one of two forms. Either the origin of the Tocharians must somehow be integrated into the narrative of how the Yuezhi migrated westwards from Gansu in 162 BCE, or a deeper origin must be sought that derives the ancestors of both the Yuezhi and those who spoke Tocharian languages in the northern part of the Tarim Basin from the same source. The first approach would require a nearly impossibly tight chronological squeeze so that the second-century BCE Yuezhi could be regarded as the Proto-Tocharians. The second approach would require that Tocharian origins be sunk deeper than any of the Chinese historical documents account for and renders a purely historical solution impossible.
2. The Yuezhi must be equated with those who left written remains of the Tocharian languages in the oases of the northern Tarim basin. But the evidence for this is highly problematic as the remains of the Yuezhi language (if one does not *a priori* assume that it was Tocharian) are almost entirely limited to a small element of suspected foreign vocabulary recovered from Bactria. This has been analysed by Nicholas Sims-Williams as being most likely Iranian (Sims-Williams 2002, 229–230, 236–240). Often the arguments for Yuezhi = Tocharian tend to be reduced to the proposition that at least *some* of the

Yuezhi spoke a Tocharian language that they abandoned when they arrived in Bactria (Mair 1998, 845). This immediately mitigates any archaeological argument based on the identification of the Tocharians as the Yuezhi since we would have to distinguish within the territory of Xinjiang and western China *which* Yuezhi spoke Tocharian and *which* spoke Iranian. Unless one can demonstrate that *all* the Yuezhi spoke a Tocharian language the identification of a Yuezhi/Tocharian entity does not provide a solid starting point for further research into Tocharian origins.

3. The Chinese sources are silent on an equation between the Yuezhi and the populations in our core Tocharian region. The *Han Shu* (96A 10B), for example, explains that the 1030 people of Xiuxun (Irkeshtam) were originally "of the Sai race" indicating a Saka origin for this state (Benjamin 2006, 102). This is the type of historical reference that would have secured a Yuezhi=Tocharian equation had we been able to find a comparable statement with reference to the people of Kucha or any of the other early Tarim states that we regard as Tocharian. Unfortunately, we do not find any reference to a Yuezhi ancestry for the north Tarim oasis states. Possibly this is merely a result of the classificatory system of the Chinese observers who distinguished between the practices of the states of the "western lands" which, by the time they were recorded in the Early Han (206 BCE onwards), were regarded as indigenous settled farmers occupying defended towns, in contrast to the Xiongnu and Wusun, who were both nomadic; as the Yuezhi were also regarded as nomadic, possibly any earlier affiliation they might have had with the Tarim towns may have been lost. But the burden of proof must certainly still rest with those who would push an equation between the urban Tocharians and the Yuezhi.
4. Chinese sources situate the original homeland of the Yuezhi in the territory between Dunhuang and Qilian (Zürcher 1968, 360; Yu 2010, 22–24), i.e., in Gansu (or much further east if one follows Yu (2010, 32–33), who has the ancestors of the Yuezhi move from Shu > Lu > Jin > Hexi (Gansu). Other than the expected recovery of Tocharian manuscripts from the major Buddhist center of Dunhuang, this places the Yuezhi in an area where we have no need to find Tocharians, i.e., we cannot actually demonstrate a Yuezhi=Tocharian geographical correspondence. The only way this can be retained is if we accept the

amendment of Dunhuang to Donhong Mountain and Qilian to Tianshan that would place the "original" Yuezhi "near the modern oasis town of Turpan" (Liu, X. 2001, 267–268; rejected by Benjamin 2007, 59; see also Lin 1998, where Qilian is regarded as a Tocharian loanword in Chinese). This would make a reasonable fit, but in terms of our objectives it does not get us very far. It merely states that the Yuezhi originated where we find the later Tocharians, which amounts to little more than a tautology, i.e., the Tocharians/Yuezhi originated where we find Tocharians/Yuezhi, and it does not provide a more distant origin for the Tocharians.

5. The Greater Yuezhi were driven from Gansu by the Xiongnu in 162 BCE where they initially settled in the Ili Valley among the Wusun. The Chinese historical sources depict the evacuation of the Yuezhi, first from Gansu and then, pushed by the Wusun, from the Ili Valley. Their route northward from Gansu is not described, although Benjamin (2006, 124), quite reasonably, suggests that they either went via Hami to Urumqi or via Turpan to Urumqi and then northwards. It nowhere describes a movement to settle in the northern oasis towns of the Tarim Basin to the west of Turpan, where we later find Tocharian manuscripts. And while our knowledge of urban formation in Xinjiang is extremely poor, we can only note that on the basis of the excavations at Yumulak Kum on the Keriya, the type of fortification described in Han sources was already in existence before the migration of the Yuezhi, and it is highly improbable that the Yuezhi in flight could be imagined as the founders of Kucha nor, given their historical circumstances, likely occupants of these early fortified towns. That the two may have been related is naturally possible, but the burden of historical proof still rests on those who propose a Yuezhi/Tocharian identity.
6. The Lesser Yuezhi are recorded as remaining behind and/or amalgamating with Qiang Tibetans. Their location may be variously set to the Qilian Mountains (Haloun 1937, 266), in which case they are geographically remote from any historical Tocharians, or we might remain with Xinru Liu's adjustment to the Turpan region. If so, this would indicate that in the second century BCE the Tocharians were within part of the region where we later find them. But all the other problems associated with equating the Greater Yuezhi with the



- Tocharians would still be in force for the Lesser Yuezhi.
7. Most authors recognize that there is no single balanced equation of Yuezhi=Tocharian and attempt to deal with the issues by either some form of amalgamation or partition. Pulleybank (1995, 428), for example, suggests that the Tocharian speakers occupied the oasis towns of the northern Tarim (TAB), and the settlements from Lop Nor to the east of Khotan (TC), *and* also comprised "nomads to the north, and, in the case of the Yuezhi, to the east of these settlements, stretching into Gansu beyond Dunhuang." Under this reading, the Yuezhi are one segment of the Tocharians, and we are still left with the task of explaining where the others (TA, TB and TC), i.e., the ones whose language we actually have evidence for, came from and how they were related to the nomadic Yuezhi. Or, as Benjamin (2007, 120–121; also Xu 1996, 4) suggests, the term Yuezhi should be seen as denoting a ruling dynasty that led a confederation of pastoral nomads that could have been ethnically and linguistically diverse. This is a logical approach but it leaves little room for discussing how the occupants of the settled oasis towns might relate to such a confederation.
  8. Even if we accept a Yuezhi/Tocharian identity, the historical sources do little to elucidate the origins of the Tarim Basin Tocharian languages. One might accept Nahrain's proposal that the Tocharians originated in Gansu and that they could be identified with the Qijia culture (Nahrain 1987; 2000, 13–14), which he then equates with an Indo-European homeland on the Yellow River, about as difficult an archaeological and physical anthropological sell as one could imagine. On the other hand, that the Qijia culture does have a major "western" component within an otherwise local tradition (ceramics, settled agriculture, pig raising, burial form; Parzinger 2006, 346–347) seems to be undoubted and reflects a potential avenue of research that could very well concern Tocharian origins. The presence of items of western origin ranging from metallurgical traditions to domestic sheep or wheat to the east of the Tarim Basin is obviously a matter of critical importance in determining possible Tocharian origins. But this line of inquiry is driven by the archaeological record and is in no way dependent on the existence of the Yuezhi. Moreover, the archaeological cultures involved would long antedate any reference to the

historical Yuezhi, even if one were to attempt to push their identity back to the time of King Mu (947–928 BCE).

9. The sole archaeological argument that I am aware of concerns the assignment of niche graves (Russian *podboy*) to the Yuezhi by Zadneprovsky (1999) who attempted to trace the movements of the Yuezhi from Gansu to Bactria. Even if we set aside the problems of interpreting the niches as a clear ethnic marker across the region in which they occur (Lu 2002), it provides an historical trail that leads from east to west rather than one that we can assign to the ancestors of the Tocharians. It might be added that the presence of *podboy* is hardly limited to the areas under discussion as they are also attributed to the much earlier Okunevo culture of the Minusinsk region (lovalova 2011, 49, 51 / Соколова 2011, 49, 51).

In short, I doubt that the analysis of potential ethnonyms or tribal names, no matter how ingenious, can actually lead us to recovering archaeological proxies for the linguistic ancestors of the Tocharians. It seems that neither the contemporary archaeological remains known so far of putatively Tocharian-speaking settlements nor the parahistorical references to what may or may not have been Tocharian speakers establishes a solid foundation for a retrospective investigation of Tocharian origins. In so far as our first goal is concerned, we fail and can only offer a geographical proxy (the core territory of Tocharian documents) as a starting place for our inquiry. We move from our inauspicious start to our second goal: tracking the Tocharians back into the prehistoric record. As we are searching for the origins of a language group, it is best to start with what little we can actually glean from the Tocharian languages themselves.

### **From Language to Culture**

As we have seen, Tocharian B documents provide us with a lexicon of about 2500 words, which is well within the size range (though well outside the semantic range) of the vocabulary of a five year old child. We will ignore for the moment the very considerable number of loanwords and concentrate solely on those items of the lexicon that have been inherited from Proto-Indo-European in such a way (in terms of form and semantics) that we can presume that the words were directly derived from the

proto-language (cognate with words in other Indo-European branches) and were not a later creation within Tocharian built from earlier Indo-European elements. In short, we are attempting to analyze the reconstructed Common Tocharian language to identify the nature of the culture that the speakers of Proto-Tocharian brought with them into the Tarim Basin (unless otherwise indicated, all examples are based on Adams 1999 and 2013).

Words for domestic livestock, while not abundant, do cover most semantic fields. Tocharian retains the widespread IE lexicon of the herdsman, e.g., TB *pāsk-* 'guard, protect' (usually livestock) and TA *wāsri* 'grassy area, pasture' (usually in the context of grazing livestock). The Tocharians retained one of the most widespread Indo-European generic designations for livestock, i.e., TB *štwerpew* 'four-footer' (found in six IE groups). There are two words associated with bovines, i.e., TB *keu* 'cow', TB *okso* 'ox'; four words that concern ovicaprids, i.e., TB *āu* 'ewe', TB *yrīye* 'lamb?' 'male sheep' (Pinault 1997, 185–187), TB *ariwe* 'ram', TB *āl* 'ram, he-goat' (for a word that gives Hittite 'roebuck'). One of the common IE words for 'animal' has developed into a specific animal in Tocharian, i.e., TB *śaiyye* 'sheep/goat'. There are also words associated with animal products, e.g., TA *mālk-* 'milk' (verb), TB *malkwer* 'milk' (noun), TB *op* '± fatness' (< 'animal fat'), TB *śalype* 'unguent, fat', TB *šmare* 'oily, greasy'. To these we may add some words concerned with textiles, e.g., TB *pāk-* '+ comb out (wool), shear', TB *meske* 'knot', TB *wāp-* 'weave', TB *ñare* 'thread'. To the domestic livestock we must add TAB *ku* 'dog' and TB *yakwe* 'horse'. This emphasis on stockraising places Tocharian, according to Pinault (1997, 211), in the same niveau as the classical languages (Hittite, Indo-Iranian, Greek, Latin) regarding movable wealth, and at times Tocharian seems to show even more archaic forms than the other languages.

Within the historical period the Tocharians, like the Russians and Germans, also distinguished between small domestic livestock, i.e., ovicaprids (TB *śānta*), and large domestic livestock, i.e., cattle (TB *kewām*) (Pinault 1997, 199). In addition, the livestock were distinguished lexically according to sex: ewe (*āuw*), ram (*ariwe*), castrated ovicaprid (*\*alāwōn*) and by age: (*yrīye* 'lamb', *\*śaro* 'kid'), etc. In the later historical records sheep were ranked by number of combings of moult and aged by "teeth size" (Pinault 1998, 12–13).

There is one lexically secure but culturally problematic domestic animal known to the Tocharians, TB *suwo* 'pig'. While the pig was essential to Chinese stockbreeding and in abundant

evidence in the Qijia culture of Gansu, it is neither congruent with a primarily pastoral economy nor the type of animal for long-distance migration that one would propose for the ancestors of the Tocharians. Adams (1999, 698) cites some of its occurrences, e.g., pig excrement is mentioned, along with the excrement of dogs and chickens, and eating pork with honey is forbidden. Pinault (1997, 198) points out that pigs were not classified as either small (TB *śānta*) or large (TB *kewām*) livestock because "ils ne devaient pas faire l'objet en Asie Centrale d'un élevage domestique." As the same Indo-European word for pig is also preserved among some of the Iranians in reference to the "wild pig" (Benveniste 1973, 24), the most economical explanation is to presume that the same process occurred in Tocharian. In this way it could have designated the wild pig when the Proto-Tocharians entered the Tarim Basin but was then applied to the domestic pig when the animal was introduced from further east. Or, if the Tocharians entered from the west in the Late Bronze Age, it is just possible they were familiar with the domesticated pig, which is marginally attested in the Chust culture of Ferghana (Parzinger 2006, 512).

Wild fauna are also found in the Common Tocharian vocabulary. There is a verb derived from the IE word for 'wild animal', i.e., TB *śeritsi* 'hunt'. Greek and Tocharian share a word for an animal that gives us Greek 'lion' but TB *luwo* 'animal'; the proto-meaning is thus far too insecure to require that the Tocharians had once passed through lion country. Words for 'horn' and 'horned animal' are inherited in Tocharian, e.g., TB *krorīya* 'horn' and *karse* 'stag'. There are a few wild animals whose names are retained, e.g., TB *maścīsi* 'mouse'; TB *yal* 'gazelle' ('red deer' in other IE languages); TB *walkwe* 'wolf'; and just possibly (if not a loan word) TB *kercapo* 'ass, donkey' (Skt *gardabhā-*). TB *spāra* 'some type of bird' and possibly TB *kents* 'bird; goose' represent the entire ornithological legacy unless we can include TB *krañko* 'chicken'. This word may well be onomatopoeic, but if it is accepted as an inherited word (from PIE *\*kerk-* 'chicken') we then have to deal with the irony that the domestic chicken is generally regarded as having originated in South-East Asia; it also occurs on Chinese Neolithic sites and is imagined to have spread westwards (in the opposite direction to our putative Tocharian immigrants), arriving in Europe c. 3000 BC, although there are some old claims that it was found as early as the fourth millennium BC in the Ukraine (Macdonald and Blench 2000, 497). The IE word for the 'salmonid' has been generalized in TB *laks* 'fish', and there is a possible Tocharian cognate for the IE word for 'snake', i.e., TB *auk* 'snake'. There are also IE antecedents for TB *warme*

'ant'. Although a word for 'bee' does not survive, its existence in the Tocharian world is supported by TB *mit* 'honey'.

Names associated with agriculture are limited, although we have clear evidence that the ancestors of the Tocharians knew farming. There is a TB *āre* 'plough' and TB *rāp-* 'turn up soil, plough' with a rare correspondence with Anatolian words for ploughing. TB *kariške* 'harvest?' might be an old inheritance. TB *mely-* 'crush, squeeze' is an example of the widespread IE set meaning 'mill, grind' (but here appears to have lost its agricultural meaning), while TB *kārweñe* 'stone' is at least cognate with other IE words for 'quern'.

TAB *sār-* 'plant, sow, cultivate' appears to be ultimately derived from a verbal root ('cultivate') that gave 'millet' in Baltic, while TA *wsār* 'grain' derives from the verbal root 'thresh'. TB *šaiweñña* 'seed' comes from the same ultimately verbal root. There is also TB *tāno* 'grain, kernel' (the underlying meaning is difficult to determine as it gives 'bread' in Lithuanian but 'grain', even 'rice' in Indo-Iranian), and TB *tanākkō* 'grain'.

There are possible words for 'wheat' in Proto-Tocharian \**wjäsāre* (TA *wsār* '(heap of) grain', TB *ysāre* 'grain, particularly wheat') and TB *kanti* 'bread' (with 'wheat' found as the meaning in Hittite and Indo-Iranian). Although sometimes identified as 'millet', TAB *yap* more likely indicates 'barley' (Pinault 2008, 369–370) and may derive from PIE \**yewom* 'barley, grain'. TB *proksa* would supply the 'millet' word and is related to Russian *próso* 'millet' and to Old Prussian *prassan* 'millet'. This is the one possibly inherited word for 'millet', and it raises major issues which exceed the remit of this paper (the origins of millet in eastern Europe and the time of its introduction). TB *āka* also designates some type of grain, possibly 'millet' (Pinault 2008, 370, where it should designate Chinese *sù*), which is linked with TB *lyekšye*, another possible word for 'millet' although of unknown etymology (and no longer associated with Hit *haliki-* 'barley' as in Adams 1999); and *traksim* 'grain of barley/millet?' from a PIE word for 'berry' (Adams 2005).

Among the food products we have are TB *onkarño* 'porridge' and *maiki* '± broth'. A possible remnant of the vocabulary of feasting is found in TB *telki* 'sacrifice', where its Balto-Slavic cognates indicate an 'afterwork feast'. With many other IE groups, Tocharian retains the IE word for 'salt', i.e., TB *salyiye* 'salt'.

Although we have no Tocharian words for tree species we do have some generic words, e.g.,

TAB *or* 'wood', perhaps TB *witsako* 'root', TA *kulmänts-* 'reed, rush', TA *kru* 'reed', TB *pilta* 'leaf', TAB *oko* 'fruit', while the IE word for tree resin gave TB *sekwe* 'pus'.

In terms of architecture there are several terms of interest. Along with Hittite, Tocharian preserves a word indicating 'enclosure', i.e., TA *warp* 'enclosure', while it also shares a word with both Thracian and Greek that, at least in TB *rīye*, means 'city'. Names for dwellings are retained in TB *ost* 'house' and their parts, e.g., TB *twere* 'doors'; TB *leke* 'bed, resting place'. Employing the same root as found in English *house* we have TB *kuša-* 'village' (and Khotanese Saka *kūṣḍa-* 'mansion').

The vocabulary of material culture indicates that Tocharian retains some generic words, e.g., TA *ṣtop* 'club' (stick post), TAB *yepē* 'weapon, knife'. Tocharian does not preserve any of the few IE designations of containers except perhaps for TB *keru* 'drum', which may derive from the word that elsewhere means 'large pot'.

Of considerable importance is that Tocharian possesses two of the IE words for metals: TB *yasa* 'gold', TB *ñkante* 'silver'. Also critical are those inherited Tocharian words relating to transport. We have fairly clear evidence that the Tocharians possessed wheeled vehicles, e.g., TA *amäks-* 'wagon chassis' and TB *kokale* 'wagon'. There is in addition the much discussed TA *wärkänt* 'wheel' that may (or may not) be cognate (or an independent creation; Anthony and Ringe 2015, 204) with a similar word in Hittite. TB *trusk-* 'harness', however, is cognate with words in Hittite and Sanskrit. TB *pwentā* 'spokes' may be cognate with Skt *pavī-* 'wheel band' but even if so the underlying etymon would be obscure. In addition to words for land travel we have two connected with water transport, i.e., TB *olyi* 'boat' (perhaps a dug-out if Germanic 'trough' helps narrow down the semantic field) and TB *kolmo* 'boat'.

There are sufficient terms in Tocharian for status positions to indicate that the society was not acephalous. We have (along with Greek) TA *nātāk* 'lord' (Grk (*w*)*anaks* 'ruler'), TA *nāsi* 'lady' (Grk (*w*)*anassa* 'queen'), and TA *taśsi* 'leaders' (Grk *tagos*) as well as TB *walo* 'king' (from a verbal root 'to rule, be strong').

Areas where a linguistic approach is far less rewarding are those of religion and mortuary practice. Tocharian leaves us with no hint of its pre-Buddhist burial practice, and even the word for 'corpse' appears to involve a Tocharian extension of the semantic range to 'eat' (*śwal* < *śu-* 'eat'). In the area of religion we do possess the names of a god (TB *ñäkte*) of the sun (TB *kaum-*), moon (TB *meñ-*)

and earth (TB *kem-*) and, like Indo-Iranian and Greek, the Tocharians also share the formulaic compound for 'name+glory, i.e., fame' (TB *ñem-kälywe*) (Pinault 1998, 358–359).

Summarizing the evidence, the ancestors of the Tocharians arrived in the Tarim Basin with domestic livestock (cattle, sheep, horse, dog, and wild or domestic pig) and their products (milk, textiles) as well as the techniques of agriculture (plough, sow, grain, grind) and some domestic cereals, e.g., wheat, barley. Some of the inherited names of plants were transferred to 'millet' when they encountered it either on their way to or within the Tarim Basin. In terms of technology they knew both gold and silver (the word for 'copper' is not the word we have in other Indo-European language, and there is no word for 'bronze' in our TB texts). In terms of transport they possessed wheeled vehicles as well as boats. Of architectural interest is the existence of the concept of enclosure. Finally, we would expect some status differentiations as we have several words to express king or lord, and the religious evidence points to deities concerned with the sun, moon and earth.

This summarizes the evidence for the vocabulary inherited from PIE that must have been carried into the Tarim Basin by the ancestors of the Tocharians. There are, however, some words that were borrowed into Tocharian, from Iranian or from an anonymous source, that were absorbed before the Tocharian languages began to diverge in the first millennium BCE. Some of these are culturally noteworthy. For example, there is a Proto-Tocharian word for 'iron', *\*ančwān-* (TA *añcu*, TB *eñcuwo*). Martin Schwartz (1974, 409) suggested a plausible relation with Chorasmian *hnčw* 'steel' wherein both the Iranian and Tocharian words were borrowed from a third source (*\*anšūwan*). More recently, however, Xavier Tremblay (2005, 424–425) identified the source as Old Sakan from whence it evolved into Khot *hiššāna-* 'steel', and, after nasalization, provided both the Chorasmian and Tocharian words. Other loanwords of a similar age would include Proto-Tocharian *\*tsainä-* 'arrow', *\*karta-* 'knife', *\*kanakä* 'flax garment' and the notorious Wanderwort *\*parat"ä* 'axe'. To this list Adams (1998, 373–374) would add TB *newiya* 'canal', and we might recall that there is evidence for irrigation canals in the vicinity of Yumulak Kum, dated to the middle of the first millennium BCE (Debaine-Francfort 2001, 66). Tremblay employed "Old Sakan" to designate the ancestor of the various Sakan languages in the Tarim Basin (Khotanese, Tumshuq) and related neighbors such as Wakhi in the Pamirs and the Iranian elements attributed to Kanjaki in Kashgar. It could be argued that Old Sakan is indistinguishable from Proto-Eastern Iranian, the language ancestral to not only Sakan but Avestan,

Sogdian, Ossetic, etc. (Adams pers. comm.). There are several other culturally diagnostic loanwords. In TB we have *íscake* '(a kind of) earth' and *íscem* 'tile, brick' that correspond to similar words in Iranian (Avestan *ištyam* 'earthen brick'). Tremblay (2005, 438) listed this as a Sogdian loan. Some have argued that the word was also borrowed into Iranian from an unknown third source (according to Carling 2005, 53), but that is irrelevant to our current task. Another important loan yields TB *ārte* 'canal' which was employed earlier by the author to indicate that before the Tocharians entered Xinjiang they had come into contact with Iranians engaged in irrigation agriculture in Central Asia (Mallory and Mair 2000, 311), but Tremblay suggested that this too is a very late loanword (c. CE 600) from an unattested Bactrian *\*ardo*. This may be true, but the word is known in Eastern Iranian (Shughni, for example) and may be still earlier (Adams, pers. comm.). And while the TB word for 'ass' (*kercao*) is often treated as a straight loanword from Indo-Iranian (Skt *gardabhá-*), it may also have come from a third source (Carling 2005, 54). Carling (2005, 53) has suggested that the Tocharian word 'lion' (TA *šecake*) might also belong here. To these we should add a series of conceptual terms, e.g., *\*pāka* 'share', *\*waipacca* 'possession', and *\*parna* 'glory', while Tremblay regarded *\*wālant-* 'king' (< 'ruling') to most likely be a calque as the only other Indo-European language to nominalize the participle from this root is neighboring Saka (Tremblay 2005, 426). While there is abundant evidence for loans from a variety of later Iranian languages, e.g., Bactrian, Sogdian, Tremblay (2005, 444) argued that his Old Sakan was the earliest stratum of Iranian loanwords and, more importantly for our purpose, there is no evidence that "involves a geographically remote Iranian language." In short, he suggested that we have no evidence to presume that the incorporation of the earliest Iranian loanwords in Tocharian need have taken place outside of the Tarim Basin, i.e., we cannot follow the trail of the Proto-Tocharians to the Tarim Basin through the evidence of loanwords borrowed from Iranian languages along the course of Tocharian migrations. Rather, the loanwords should have passed into Tocharian when the two language groups were neighbors in the first millennium BCE.

If one accepts Tremblay's conclusions then we can see that there is a case for seeing the ancestors of the Tocharians as lacking an intermediate history of contact with any other Indo-European language, from their separation from Proto-Indo-European until after their arrival in the Tarim Basin (but see below). There they eventually came into contact with Old Sakan speakers from whom they borrowed words relating to warfare, political economic concepts and other semantic



fields. One of the more easily dated items is the word for "iron" that must not have been borrowed much earlier than c. 1000 BCE. And a date of c. 1000 BCE is also very much the type of date we might apply on linguistic grounds to Proto-Eastern Iranian or Old Sakan.

### Iron Age Tocharians

The second requirement obliges us to trace the physical and cultural remains of historical Tocharians retrospectively into the prehistoric period, i.e., where or who were the prehistoric Tocharians during the Iron Age, the period to which most assign the latest phase of Common Tocharian before its breakup? If we assume that Common Tocharian had not seen any major displacement from the later historical seats of the Tocharians, then what do we know about human settlement from Aqsu/Akesu to Qumul/Hami in the period c. 1000–1 BCE? We cannot answer this question, because the settlement evidence is so extremely scarce, but we can briefly survey the evidence for burial (Fig. 2) to see what it indicates.

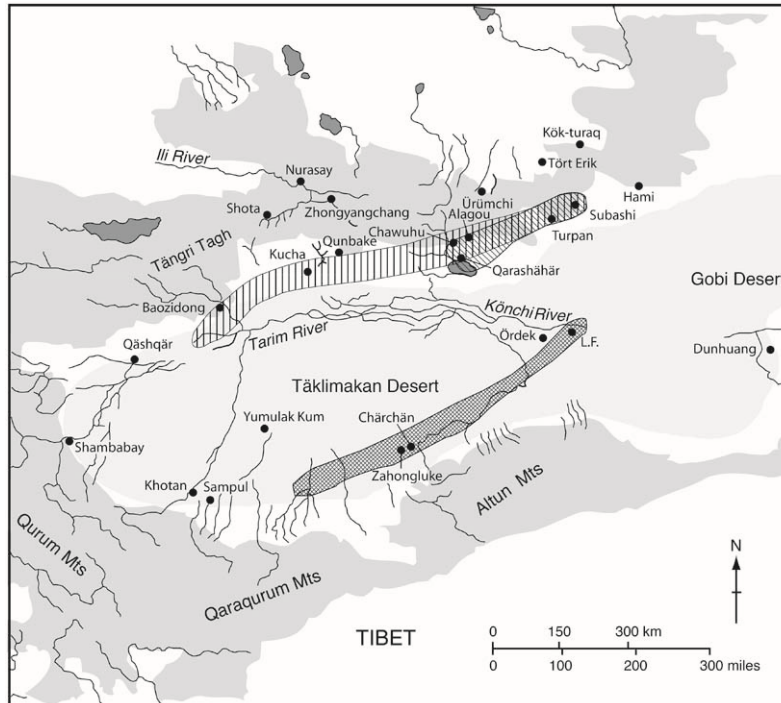


Figure 2. Iron Age sites in the Tarim Basin.

Moving from west to east, our closest plausible candidates for prehistoric Tocharians would

be those buried in the cemeteries at Baozidong (Bozdöng), Qunbake (Chong Bagh) and Chawuhugoukou (Charwighul) in the west along the southern foothills of the Tianshan (Debaine-Francfort 1989, 183–189) and then eastwards to Alagou (Alwighul) and then to Aidinghu (Ayding Lake) and Subashi (Subeshi) in the Turpan region (Debaine-Francfort 1989, 189–196), to end at Hanqigou and Miao’ergou near Hami. These are the closest sites to the oasis towns and Buddhist caves where Tocharian B is recorded and, at least, where manuscripts of Tocharian A have been recovered, although, as already mentioned, we may be a little skeptical of any site from Turpan eastwards possessing “native” Tocharian speakers.

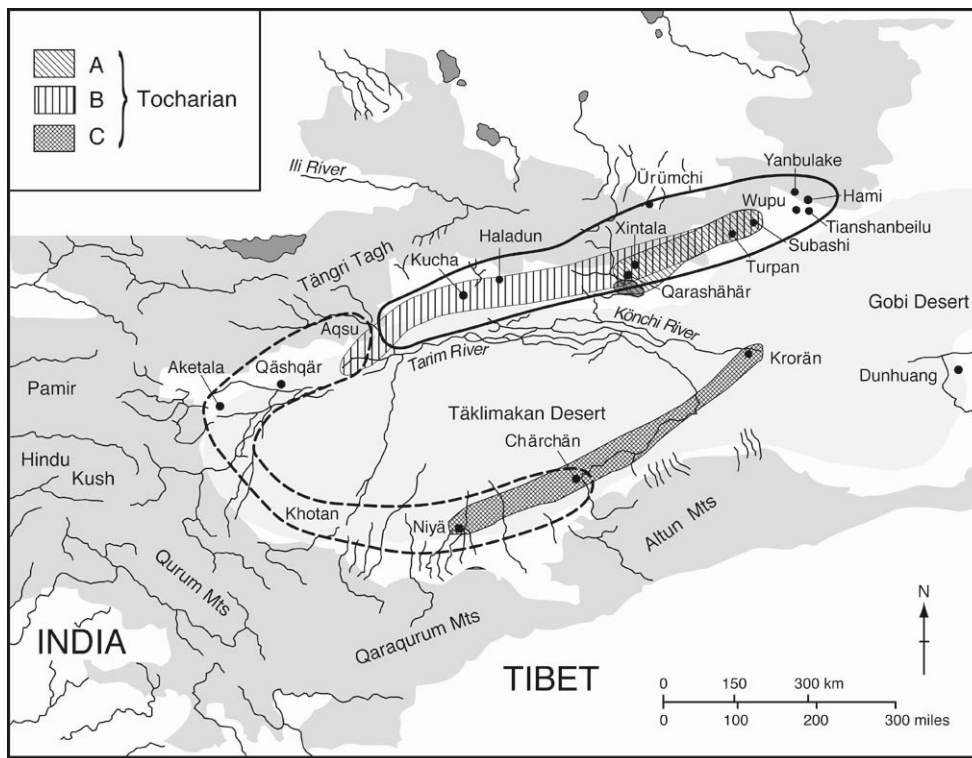


Figure 3. Distribution of painted wares (solid line) and gray wares (dashed line).

For Tocharian C there is little in the Iron Age other than those buried in the cemetery at Zahongluke (Zaghunluq). There are several points to be considered concerning such a “solution”:

First, there is no archaeological case for uniting all of these sites (and others of the same region) into a single archaeological culture, i.e., there is no Culture ‘X’ that we can identify as the Iron Age proxy for the Proto-Tocharians. For example, even the broadest regional subdivisions, such as those employed by C. Debaine-Francfort (2001, 57) would distinguish between the geographical region

of TAB (eastern Xinjiang, where painted wares were employed) and that area from which we recover evidence for TC (Fig. 3). The territory where we find Kroranic documents (TC) is spread across both the western and southern Xinjiang regions as far as Chärchän, where gray wares dominated. But we also have to deal with the Lop Nor region that lies beyond the other cultural provinces. Not only is the TC area divided between what might be regarded as two different cultural regions (and both are different from that which unites the TAB region), but one of the regions, the western, embraces territories where we not only find TC (Niya and farther east) but our primary evidence for Iranian, e.g., Khotan and Kashgar, as well. As noted above, it is always possible that the Kroranic documents in Niya merely reflect the expansion of the power of the kingdom of Loulan westwards and do not indicate the presence of Tocharian C aborigines; in fact it possibly masks the presence of Saka-speaking populations. This argument would only work if the personal names that appear to be Tocharian were not found in the Niya documents. For the purposes of exposition, our primary focus will be on TAB, and TC will be treated as a devilishly problematic addendum.

Recently, Leonid Sverchkov (Сверчков 2012, 41, 123) has argued that, as the historical Tocharian-speaking region coincides with populations employing painted wares, this does suggest a single archaeological correspondence, i.e., TAB correlates with the painted ware province which he sees as deriving from the west (Ferghana; see also the discussion in Matbabaev 2008 / Матбабаев 2008) rather than the east (Gansu), which is the more commonly received interpretation (Debaine-Francfort 2001, 61). Sverchkov's hypothesis seems unlikely as western Xinjiang, the area most proximate to Ferghana, lacks painted wares, and the closest painted ware site in Xinjiang (Xintala/Yengidala) "exhibits no parallels with Iron Age Oxus or Ferghana." Henri-Paul Francfort (2001, 228) has concluded that "painted pottery is definitely not a relevant criterion for connecting Oxus and Ferghana with Xinjiang." The only area where direct connections can be seriously envisaged between Ferghana and Xinjiang is with the Aketala culture in the far west of Xinjiang, which would fall well within the later historical territory of the Saka rather than the Tocharians. Sverchkov (Сверчков 2012, 123) notes that iron entered Xinjiang through Ferghana and, as we have already seen, as the Tocharian word for 'iron' appears to be an Old Sakan loanword, this could just as easily support an Iranian identity for Ferghana as a Tocharian.

Second, the material culture of the Eastern province where TAB is found is archaeologically

schizophrenic. As we have seen, the painted wares appear to have their origin in the east in native Chinese wares of Gansu and Qinghai (Mei 2000, 61; Debaine-Francfort 2001, 61), while the metallurgy usually displays close links with the Eurasian steppe province. Although generally archaeologists would weigh ceramics as a far more sensitive index of ethnic affiliation than metal types, this approach provides a poor fit for what we might expect of the Tocharians. Painted wares appear to spread from the east to the west, so any attempt to equate the source of the painted wares with the spread of Tocharians would lead us back to the native cultures of Gansu and sites further east. If one wishes to introduce the Yuezhi argument here, one might, but the spread of painted wares to the west long antedates the Yuezhi flight to the west or any historical reference to the group. On the other hand, it is certainly possible that the 'western' impact on the Gansu corridor and adjacent regions did involve the ancestors of the Tocharians who subsequently migrated westwards only after first settling on the fringes of Chinese civilization. This would involve an exercise of what I have termed the *Kulturkugel* (Mallory 1998), wherein an ethnic group sheds its own material culture and adopts that of a foreign population (painted wares) and employs it to advance its own identity. But given the evidence for still earlier 'western' settlement in the Tarim Basin, I suspect that it is more likely that the painted wares simply indicate the adoption of eastern Chinese technologies by earlier Europoid settlers in Xinjiang. At present, the social significance of this spread of painted wares eludes us. Unfortunately, all of this reduces much of the material culture (ceramics, metal artifacts) to the status of ambivalent at best when it comes to providing an indication of the source of the populations who buried their dead south of the Tianshan.

Third, the evidence for burial in this Eastern province displays multiple linkages. Whether one treats the three westernmost cemeteries of this province as a single culture (An 1998, 47) or as independent cultures (Mei 2000, 15), the burials found in Baozidong, Chawuhugoukou and Qunbake, for example, do reflect some common trends: shaft-graves; graves marked by either stone cairns (Chawuhugoukou, Baozidong) or earthen mounds (Qunbake); presence of animal remains, especially heads of horses, cattle and camels (Chawuhugoukou, Qunbake); and multiple burial (Chawuhugoukou, Qunbake). While large stone slabs covered the burials at Chawuhugoukou, wooden logs and mats were employed at Qunbake. Although Mei (2000, 16) remarks on such differences, the range of treatment here is no greater than, for example, that found in some of the

other Bronze Age cultural complexes of the Eurasian steppe, e.g., Yamnaya burials. A number of these traits, e.g., animal remains in a separate pit, can be found among steppe populations in Kazakhstan (Debaine-Francfort 2001, 65) and the Altai (Mei 2000, 67). We are dealing with sizeable populations here; Chawuhugoukou's five cemeteries yield nearly 2000 burials (and another 56 from Qunbake).

Not far distant from Chawuhugoukou lies Alagou, a cemetery once linked with Chawuhugoukou but since regarded as a separate culture (along with some other sites). Concentrating on the similarities, we can see in the Alagou I culture and another cemetery at Dongfengcheng (Shamal Känt), 70 km west, the use of stone cairns, chambers lined with pebbles, and multiple burials. From Alagou also came large quantities of animal bones (sheep, horse and camel). Finally, around Turpan we encounter the Aidinghu culture, including the cemetery at Subashi with its mummified women in tall pointed ("witches") hats (Mallory and Mair 2000, 220–221). Again we find the use of stone cairns and wooden platforms for the deceased, or timber coverings, This territory has been assigned historically to the Jushi/Gushi, a pastoral people who lived in tents but also possessed a fair knowledge of agriculture (Debaine-Francfort 1989, 189). Their language is unknown but they could be obvious candidates for Tocharian (A?) speakers.

While ceramics differ across this entire region, and there are clearly sufficient differences in material culture and behavior for archaeologists to propose a series of separate cultures, one wonders whether the similarities in economy and mortuary practice might not suggest that at least some of these different cultures could be incorporated within a higher taxon, something like the Russian archaeological concept of a "cultural-historical region" that one employs when describing, for example, the Andronovo phenomenon.

Fourth, many of these cultures reveal mortuary structures or material culture that have often been linked with the Eurasian steppe, specifically Pazyryk, which is often seen as a proxy for Saka, i.e., an Iranian culture. So the bronze tray from Alagou II has been identified as among the ritual objects of the Saka (Mei 2000, 18), and wooden plates from Alagou I have been compared with Pazyryk (Mei 2000, 18). The problem here is that the Bronze Age north of the Tianshan can be seen as an extension of the Eurasian steppe Andronovo horizon (Debaine-Francfort 2001, 57), which one generally presumes to involve an (Indo-)Iranian identity. So the north-south flow of steppe metallurgical types and other artifacts may be seen as evidence for the potential spread of Iranian languages. While these

correlate with the later Chinese historical tradition of locating presumably Iranian-speaking tribes such as the Wusun in the north, it does set up a problematic pincher movement of Iranians coming from both the west (the Pamirs and onwards to the historical Saka sites of western Xinjiang) and northern Xinjiang. If we also label all those buried in the cemeteries south of the Tianshan as Iranians we effectively eliminate every known Iron Age occupant of the region as a potential Proto-Tocharian. This essentially proceeds from the probably dubious paradigm in which everyone is presumed Iranian unless they can prove otherwise. The issue here is that anything known from the Eurasian steppe from the beginning of the Andronovo horizon through the Iron Age is generally interpreted as Indo-Iranian, or specifically Iranian. The western sites (Chawuhugoukou, for example) certainly display cultural practices that easily tie them with the steppelands, e.g., horse deposits in adjacent chambers such as those found at Berel' in the Altai) and Alagou II with its Pazyryk-compatible ornaments (Debaine-Francfort 1989, 195). Perhaps the only burials that have been distinguished as something other than "steppe/Saka" are those attributed to the Gushi/Jushi such as Alagou I (Debaine-Francfort 1989, 193). A major issue here is, to what extent do we distinguish the sites of the Jushi purely on the basis of their archaeological remains, or, alternatively, because Chinese parahistorical sources have provided us with an ethnic label for the agro-pastoralists that lived in the Turpan region?

Fifth, if one rejects the ascription of these pastoralists (with farming) to the Tocharian languages, then we must presume that the Tocharians already occupied the various oases and have remained so far nearly invisible during the Iron Age (c. 1000 BCE). This forces us to seek their physical remains earlier in the Late Bronze Age among the small number of sites that occupy the appropriate region. In contrast to the Iron Age sites, we are confined to several settlement sites that are difficult to tie to any specific mortuary practice (Fig. 3). Xintala, situated within the general region of the later cemetery at Chawuhugoukou and dated to c. 1700–1300 BCE (Mei 2000, 10), has revealed a variety of agricultural implements (hoes, sickles, grinding stones), copper metallurgy, and mud-bricks. Debaine-Francfort (2001, 63) emphasizes that Xintala is the only site south of the Tianshan "where metal artifacts of the steppe were found together with gray ceramics, likewise of a steppe type." Again, if Late Bronze Age steppe-type is proxy for Iranian-speaking, this site does not make a convincing case for a "native" Tocharian identity.

The other significant site is Haladun (Qaradöng), which is situated in the general region of the

later Tocharian town of Kucha. It has been linked to both the site of Aketala (Aqtala) far to the west (approaching the Pamirs) and the Chust culture of Ferghana (Mei 2000, 10–11). Making a case for a Tocharian identity here is also problematic for two reasons. First, parallels with Aketala in western Xinjiang are more plausibly seen as evidence for an Iranian identity as this region appears to be historically linked to the Saka presence in western and southern Xinjiang (Francfort 2001, 229). Moreover, continual references to the Andronovo connections, be it pottery or metallurgy, also suggest an (Indo-)Iranian rather than Tocharian identity as this cultural horizon maps itself very well onto the distribution of at least Iranian if not greater Indo-Iranian expansions (Kuzmina 2007).

The discussion above emphasizes a major problem in the search for Tocharian origins indicated at the beginning of this paper: we lack a convincing external source for the Tocharians which might permit us to either identify them or relate them to an earlier culture. The internal cultural (linguistic) evidence that we have for the Tocharians does not provide us with adequate criteria to distinguish between Saka and Tocharian "cultures." They both clearly inherited a mixed pastoral-agricultural economy with attendant livestock, including horses, wheeled vehicles, and basic metallurgy, including words for gold and silver. There are loanwords from Iranian into Tocharian (e.g., iron, canal) that are culturally marked, but they are time dependent, i.e., there is no difference between an Iranian site c. 1000 BCE with iron and a Tocharian site of the same period that also possessed iron plus a word for that metal borrowed from Iranian neighbors.

If we view the broad territory of later TAB sites, we can see immediately that the archaeological record is hardly adequate for us even to pose questions about continuity or discontinuity from earlier periods. We have seen, too, that in the western area, where we earlier found the large cemeteries of Chawuhugoukou, the predecessors (Xintala, Haladun) made poor candidates as earlier Tocharians because they do not set themselves off from what we might expect of a Saka site. In the territory of the Middle Tianshan (Alagou) there are no known Bronze Age sites from which to derive anyone, and this is also much the case for the Turpan region. Only further east, around Hami, do we have abundant evidence for Bronze Age settlement about 1500 BCE. The cemeteries with brick-lined tombs from Tianshanbeilu, Wupu (Qaradöwä) and Yanbulake (Yanbulaq) provide some interesting cultural markers as the first of these provides the earliest evidence of silver in Xinjiang (Mei 2000, 11) while Wupu revealed remains of a wheeled vehicle, both cultural items that are

Tocharian (and Saka) compatible. As for Yanbulake, the series of radiocarbon dates is challenging in the extreme, but the presence of iron suggests that this cemetery straddled the Bronze and Iron Ages. This is further emphasized by the observation that the later Iron Age cemeteries of the same region such as Hanqigou appear to continue earlier practices seen at Yanbulake (Mei 2000, 22–23).

The physical types at Wupu and Yanbulake indicate Europoids, although the latter site reveals Mongoloids as well. As the painted wares found at these sites appear to derive from places farther east, we can easily imagine that we are dealing with native populations of “Westerners” adopting at least elements of ceramic production from farther east. The eastern cultures, however, such as Qijia and Siba, were not only donors but also recipients of cultural influences from the northwest (steppe) regions in the period c. 2000 BCE (Mei 2000, 62–64). This is currently the earliest period at which we can imagine the ancestors of the Tocharians in Xinjiang.

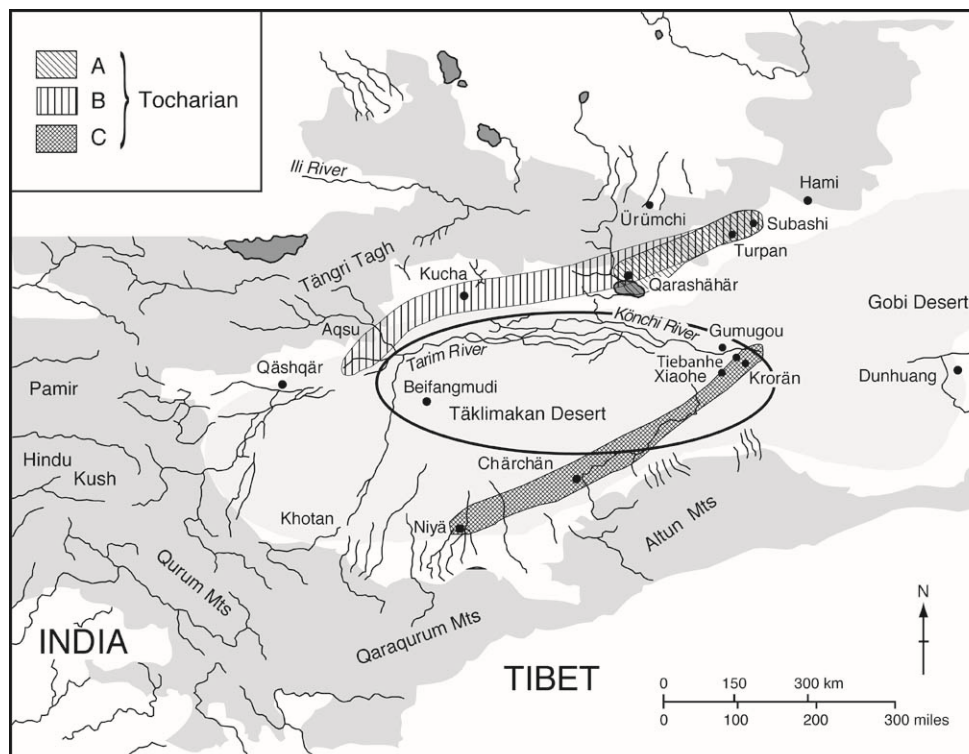


Figure 4. Early Bronze Age sites of the Xiaohe culture.

### Early Bronze Age Tocharians?

The discovery of western physical types in the Tarim Basin in the centuries around 2000–1700 BCE provides our earliest horizon for identifying Proto-Tocharians (Han 1998). Here our interest is focused



primarily on the modern excavations of four cemeteries (Fig. 4): Gumugou (Qäwriḡhul), Tiebanhe (Töwan), Xiaohe (Small River) and Beifangmudi (Northern Cemetery). In terms of geographical location, the first three are located in the Lop Nor region and, consequently, only enter discussion if we accept the existence of a Tocharian C or presume that the populations buried in these cemeteries moved northwards toward Hami and, perhaps, elsewhere along the territory assigned to TAB (or alternatively, if their source population was also settled in TAB regions, but we have not yet uncovered this evidence). The last site, situated over 500 km to the southwest, lies some 70 km beyond Yumulak Kum, so far the oldest known of the Tarim towns (c. 200–100 BCE). Beifangmudi complicates matters no end because it is situated in the same general area in which we later find evidence of the Saka and yet it is clearly a sister site to Xiaohe and speaks for a common horizon of Europoid populations stretching across the Tarim Basin in the early second millennium BCE.

All of these sites appear to both be related and constitute a distinct archaeological horizon of burials. Poplar coffins have been recovered from Gumugou, Xiaohe and Beifangmudi. All cemeteries are aceramic. The cemeteries routinely indicate the deposition of ephedra and wheat, the latter either in a basket or in small textile bags. There is also a tradition of wooden effigies. The absence of pottery and the dearth of metal objects (generally fragmentary or awls) render any attempt to connect these burials with later cultures extraordinarily difficult although wooden effigies at least have been recovered from the later sites of Yanbulake and Aidinghu.

This early horizon of sites provides the earliest physical evidence for "Westerners" in the Tarim Basin and, therefore, the earliest potential evidence for Tocharians. There are reasons both to support and question their identification as Proto-Tocharians.

A comparison of the material culture of the Xiaohe horizon and that reconstructed from Proto-Tocharian reveals enough correspondences that one certainly cannot exclude the possibility that the ancestor of Tocharian was spoken in the Tarim Basin as early as 2000–1800 BCE. The routine placement of wheat in burials indicates the use of domestic cereals, while there is also evidence for the basic domestic animals (cattle, sheep/goat and horse). The problematic pig remains, but the wild boar was reputedly found both in the Tarim Basin (though obviously not in the desert) and on the lower slopes of the Tianshan; slight traces of pig were recovered in addition from the Iron Age site of Yumulak Kum on a now desiccated stretch of the Keriya River. It might be noted that Gumugou also

yields the remains of the camel, an animal we cannot reconstruct to Proto-Indo-European, but which the Tocharians came to know. TB gives us an adjective derived from a putative *\*koro* 'camel' (or 'mule?'; the word occurs in caravan passes), and this word has no convincing etymology, although it may be related to a similar word that could mean 'camel' in Kroranic (D. Adams, pers. com.). Wheeled vehicles have not been recovered from the burials, but this could merely be the result of cultural practice; the earliest dated wheel in the Tarim Basin is from Wupu (c. 1400–1000 BCE; Mei 2000, 12), but it is likely that wagons were known here much earlier, as they are found from the third millennium onwards in the Eurasian steppe, including Mongolia. We might observe that there are two words associated with boats in Tocharian, TB *olyi* 'boat' and *kolmo* 'boat'. Both of these words have etymologies that suggest they originally designated a hollowed-out log. So the boat-shaped coffins of the Xiaohe horizon could at least have found a linguistic referent in the Tocharian vocabulary. Silver and gold have now been recorded from the time of the Xiaohe horizon, while silver has also been recovered from the mid-second millennium BCE site of Tianshanbeilu (Mei 2000, 11), and there are gold and silver ornaments from Gansu that date to the early second millennium BCE (Bunker 1998, 607).

Selection of the Xiaohe horizon as the earliest expression of the Tocharians in Xinjiang requires that the descendants of the people buried in the early horizon graves continued to occupy the Tarim Basin, at least the areas where Tocharian documents are later found, and that despite influences of painted wares from further east or steppe metallurgy from the north or, perhaps, west, the Tocharians still preserved their language. In other words, later cultural influences were absorbed by these putative Early Bronze Age Tocharians but did not occasion language shift except, perhaps, in the west where some adopted the language of the Saka. While such a premise may seem to cloud any image of distinctive ethno-linguistic divisions in the Tarim Basin, as the Tocharians eventually became indistinguishable from the Saka, it is hardly unprecedented. After all, from the historical period our elusive Tocharians dressed as Indian monks or Sassanian knights.

### **Outside Source: The Linguistic Evidence**

At the beginning of this paper it was emphasized that, unlike Saka, Tocharian lacked any close linguistic relatives outside the Tarim Basin. In fact, there are aspects of the Tocharian languages that

have suggested to some scholars evidence for the route the Proto-Tocharians might have taken on their way to the Tarim Basin. These aspects comprise the dialectical positioning of Tocharian within the Indo-European family, the potential source and direction of substrate effects on Tocharian, and evidence that other languages borrowed Tocharian words while the Tocharians were still situated outside the Tarim Basin.

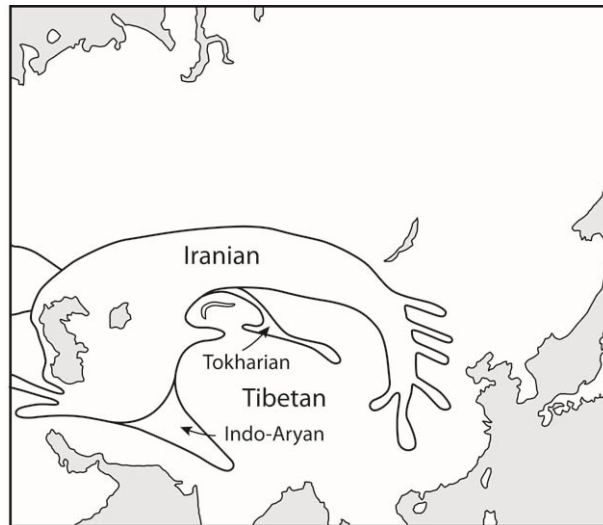


Figure 5. The encirclement of Tocharian by Indo-Iranian and other languages (after Mair 1998).

The linguistic position of Tocharian within the Indo-European language family is a subject of major debate with scholars divided between two very different camps. The first argues that the closest linguistic relatives to the Tocharians are to be found among the European languages, specifically Germanic, languages of the Balkans, and perhaps Greek (see, for example, Adams 1984; Hamp 1998). The second position argues that Tocharian was probably the second group to separate from the Indo-European language family (after Anatolian; Garrett 2006, 146) and, consequently, it was peripheral to the expansion of the rest of the Indo-Europeans, occupying a position in the east comparable to Celtic in the west (Petersen 1933; Gamkrelidze and Ivanov 1995; Ringe 1990; Ringe et al. 1998). Operationalizing either of these hypotheses from an archaeological perspective is difficult because any spatial ramification generated by cladistics relies on where one anchors the Proto-Indo-Europeans and its earliest descendant branches. That the first model, the European hypothesis, might seem to select for a major immigration of proto-Tocharians from Europe can be found in Robert

Heine-Geldern's (1951) classic solution to the Tocharian problem that argued for a Hallstatt migration from the territory of the Germans and Illyrians (he derived the 'western' bronzes in the Dongshan culture from Hallstatt). A much more recent European solution has been proposed by Alexei Kovalev (2011; 2012b) who derives the ancestors of the Tocharians from the late Neolithic of southern France. While most of Heine-Geldern's model strains credibility today, he was attentive to one important issue: he required that his Proto-Tocharians made their trek before 720 BCE, because by that time he believed the current of migrations had shifted from west-east to east-west (Heine-Geldern 1951, 249). He recognized that he had to situate his Proto-Tocharians in their homes before the steppelands were entirely occupied by Scythians/Saka, i.e., Iranian-speakers. Kovalev's still earlier solution obviously can deal with Iron Age east-west migrations, but, as it is set to the same period in which we find pretty solid evidence for early Bronze Age (Yamnaya) migrations from the east to Central Europe, it still seems to encounter the same problem of pitching a migration moving upstream of major population movements. The critical element here is that there seems to be one issue that does receive widespread linguistic support: Tocharian is in no way closely related to the languages of its geographical neighbors, Indo-Iranian (Meillet 1914, 14; Pinault 2002, 244). This means that any attempt to introduce the Tocharians into the Tarim Basin *after* the Indo-Iranians had filled the Eurasian steppe and Central Asia must envisage the Proto-Tocharians migrating across territory already occupied by Iranian-speakers (cf. Mair 1998, 849–853 where his hard-pressed Tocharian Sprachamoeba originated to the west of Indo-Iranian but then managed to work its way around the Indo-Iranians to beat them to Xinjiang). The Tarim Basin seems sealed by Iranians (and Altaic-speakers) to the north, Iranian to the west, Indo-Aryans to the south-west, Tibetans to the south and the Han to the east, any of which should serve as a trip-wire to any putative Tocharian immigration (Fig. 5). If one accepts Tremblay's conclusion that the earliest contacts between Tocharian and Iranian occurred *within* the Tarim Basin (with his 'Old Saka'), then there does not seem much room for maneuver. For this reason, an archaeologist might well regard the second model that places Tocharian on the eastern periphery as more attractive, since one can avoid the problem of Indo-Iranian encirclement of the Tarim Basin by bringing the Tocharians into the Tarim Basin before the expansion of the Indo-Iranians across the Eurasian steppe (Mallory and Mair 2000). But this involves privileging the ease of an archaeological solution in evaluating what should be an entirely linguistic issue. In short, the relationship between

the Tocharian clade and the other Indo-European languages is simply so controversial that it should not impinge on archaeological argument. On the other hand, archaeologists must still deal with the apparent "sealing off" of the Tarim Basin by putative Iranian-speaking populations.

A second attempt to position the Proto-Tocharians outside the Tarim Basin involves the issue of a non-Indo-European substrate. One of the major features that sets Tocharian off from all other Indo-European branches is that Tocharian has shed several of its case endings and replaced them as if it were behaving like an agglutinative rather than inflexional language. This could be presented as evidence that the Proto-Tocharians had come into contact with speakers of an agglutinative language (or that Proto-Tocharian spread by language shift over speakers of an agglutinative language) either along their trek to the Tarim Basin or, possibly, within the Tarim Basin itself. As both Uralic and Altaic are agglutinative languages, it might be suggested that the ancestors of the Tocharians entered the Tarim Basin from somewhere along the northern tier of the Eurasian steppe, the territory either occupied or adjacent to the earlier Uralic and Altaic-speaking populations. This, however, is a very weak argument as almost all the languages that the potential ancestors of the Tocharians could have possibly come into contact with tend to be agglutinative, e.g., Sumerian, Hattic, Hurrian, Elamite, and even Tibetan displays agglutination. In short, the agglutinative tendencies of Tocharian do not provide a reliable indication of their route to the Tarim Basin. It might also be noted that none of the processes involved (shedding case endings, regularizing endings so that they appear agglutinative) necessarily requires an agglutinating substrate.

The third linguistic factor is the proposal that the Uralic languages borrowed some of their vocabulary from Tocharian (Napol'skikh 2001; Blažek and Schwartz 2008, 57–59). Vladimir Napol'skikh has isolated about eighteen lexical items that he believes were borrowed from a language *like Tocharian* ('Paratocharisch') into various stages of the Uralic languages. The comparisons are of variable credibility and the critical issue is that although Napol'skikh associates the Proto-Tocharians with the Afanasievo culture of the Minusinsk Basin-Altai region, the lexical evidence adduced suggests that the Tocharian vocabulary intersected the fragmenting Uralic languages on a westward trajectory (he relates them to the westward spread of the Seyma-Turbino horizon toward the Baltic). Consequently, it is difficult to see how such evidence could be employed to trace the movement of the Tocharians eastwards to the Tarim Basin. Blažek and Schwartz (2008, 57–61) are more favorable to

such evidence, but so much rests on positioning the location of the place of borrowing between a proposed Tocharian-like language and whatever state of disintegration we find among the Uralic languages that such evidence cannot be regarded as really secure (cf. discussions of the archaeological correlations between Indo-European and Uralic in Parpola 2012a, 2012b).

In short, as suggested earlier, there do not appear to be any totally reliable linguistic anchors outside the Tarim Basin to which one can tie the immediate antecedents of the Proto-Tocharians.

### **Outside Source: The Archaeological Evidence For Steppe Origins**

Our third archaeological target involves determining an immediate origin for our "prehistoric Tocharians" in a location outside of the Tarim Basin, and it should now be apparent that we lack any serviceable linguistic hints as to where this might be. Logistically, the most obvious direction for immigrating "Westerners" is the north, i.e., through the Jungghar Basin, which may be seen as an extension of the Eurasian steppelands. The culture concerned here is the first (Bronze Age) phase of the Qiemu'erqieke (Shamirshak) culture that is primarily found just south of the Altai but does reveal some southern outposts as far south as Jimsaer (Jia and Betts 2010). Its chronological position is not fixed by evidence from Qiemu'erqieke itself, but Kovalev can cite comparable sites dating to c. 2500–1800 BCE (Kovalev 2011; 2012a; 2012b). So it would appear to be the earliest Bronze Age culture in Xinjiang. Comparisons with the Jungghar Basin and the Xiaohe horizon in the Tarim Basin are not convincing, e.g., baskets accompanying the burials in the Xiaohe horizon may replicate some of the bag-shaped ceramics found at Qiemu'erqieke. Such a comparison is extremely weak, and Jia and Betts (2010, 311–312) conclude that "it is difficult to see Qiemu'erqieke Phase I as in any way directly ancestral to these largely aceramic oasis cultures." Kovalev's survey of this culture emphasizes this even further: he notes the frequent presence of stone vessels as well. In short, while there is a tendency to recognize contacts between the Altai and Minusinsk regions to the north with the Jungghar Basin (Matbabaev 2008, 136 / Маѳбабаев 2008, 136; Shao Huiqiu pers. comm.), there is no very strong case to link what little we know of the Early Bronze Age in the Jungghar Basin with the (near?) contemporary Xiaohe horizon in the Tarim Basin. Discussion does not stop here, however, because archaeologists (including the author of this paper) have engaged in an academic version of Xiangqi, the Chinese version of chess, in which we employ our *pào* 'cannon' to leap from the Altai-

Minusinsk region over the Jungghar Basin to land beyond in the Tarim Basin (Fig. 6). The staging ground for these "northern" steppe contacts are a series of cultures concentrated around the Minusinsk Basin and the Altai. The sequence of cultures and their chronology (after Svyatko et al. 2009) are as follows:



Figure 6. The northern approach to the Tarim Basin.

#### *Afanasiovo culture (3300–2500 BCE)*

The Afanasievo culture introduces domestic livestock and metallurgy to the middle Yenisei region and the Altai. The culture is primarily known from its burials, more than 356 graves on the middle Yenisei and another 240 in the Altai, while settlements are far fewer, with 10 known from the Yenisei and 40 now recorded for the Altai (Stepanova and Polyakov 2010, 8 / Степанова, Н. Ф. и А. В. Поляков 2010, 8); there are also about 10 burials known from Mongolia. Afanasievo has traditionally been associated with a long distant migration from the European steppe (Yamna culture; Mallory 1989; Avanessova and Dzhurakulova 2008, 29 / Аванессова и Джуракулова 2008, 29) or Repin (Anthony 2007), and, although this assumption has been challenged (Frachetti 2012), it has been supported very recently by limited aDNA analysis which suggests that the Yamnaya and Afanasievo populations are

"genetically indistinguishable" (Allentoft et al. 2015). Its earliest dates are also controversial, with some possibly going as early as 3700 BCE or earlier, while even the dates here cited, which suggest a duration of 1300 years, markedly longer than any of the succeeding cultures of the region, are also a matter of controversy (Polyakov 2010 / Поляков 2010). It should be emphasized that the terminal dates for Afanasievo are still 500 years earlier than the evidence for Bronze Age cultures in the Tarim Basin, and so any attempt to connect the two must deal with a half-millennium lacuna.

#### *Okunevo culture (2500–1800 BCE)*

The Okunevo culture is situated in the Minusinsk Basin. It is primarily known from 75 cemetery sites that have yielded 440 graves and 750 individuals (Sokolova 2011, 29 / Соколова 2011, 29). The culture is usually presented as a successor to the Afanasievo culture, although Sokolova (2011) offers considerable evidence (16 instances) where Okunevo remains overlap with Afanasievo or provide evidence of cultural hybrids. Genetically, the culture is seen to have its roots initially in the local Neolithic (i.e., ceramic-using) Ust'-Belaya culture, which was subsequently influenced by intrusive Afanasievo immigrants, and the available aDNA evidence does suggest that the Okunevo population had a very different origin from the Afanasievo (Allentoft et al. 2015). In terms of chronology, only the Okunevo culture makes a plausible direct source for the formation of the Xiaohe horizon. Grigoriev (2002, 230–231) suggests that it might be equated with the Tocharians, although he does not adduce much in the way of archaeological comparanda other than the similarity of rock art in Okunevo and the Tianshan. Given the evidence of aDNA, if the Okunevo culture was a vector for the spread of a pre-Tocharian language, they would first have had to have experienced a shift to the language of their Afanasievo predecessors.

#### *Andronovo culture (1700–1500 BCE)*

The Andronovo remains reflect the great pan-steppe formation of an Andronovo cultural-historical area of related cultures (Andronovo is a higher taxonomic label than "culture"). It is usually associated with various stages of the Indo-Iranian linguistic community (Kuz'mina 2009).



*Karasuk culture (1400–900 BCE)*

The Karasuk culture emerges and spreads over the Minusinsk Basin and the adjacent region to the west (the Ob river), i.e., the easternmost part of the Andronovo culture that continues elsewhere. It is especially marked by a vigorous production of distinctive bronzes, especially daggers. Karasuk metallurgy made a significant impact on the Tarim Basin and northern China in general, but this culture clearly dates after the Early Bronze Age horizon. Karasuk origins are problematic, but Lev Kleyn (Клейн 2000) has sought its origins in the Fatyanovo culture of Europe and identified it as the source of the Tocharians, while Asko Parpola (2012b, 166) maintains that it is more likely to have had an origin lying to the southeast on the fringes of Shang China (the closest thing to a received opinion we have for Karasuk origins) and is more likely to have introduced an entirely different language.

*Tagar culture (900 BCE – 200 CE)*

The Iron Age culture of the eastern steppe is usually associated with the Saka, i.e., Eastern Iranian, although others have regarded it as Proto-Samoyedic, i.e., one of the stages in the disintegration of the Uralic language family (Parpola 2012b, 166).

In terms of the origins of the Xiaohé horizon and its possible association with the Proto-Tocharians, the first two cultures (Afanasievo, Okunevo) are the most relevant, so I will first attempt to assess Afanasievo in terms of what we know about Proto-Tocharian culture, and I then will consider whether it makes a viable archaeological source for the Xiaohé sites.

Does the Afanasievo culture make a plausible fit with the cultural lexicon inherited by the Tocharians from Proto-Indo-European? We have seen that the lexical evidence suggests that the Tocharians should have been acquainted with domestic cattle, sheep/goat, horses, and dogs; they should also have known some form of pig, presumably in its wild form although by the historical period shifted to the domestic pig. Vadetskaya (1986, 19 / Вадецкая 1986, 19/) lists cattle, ovicaprids and rarely horse among the Afanasievo remains but does not list pig, and such hard evidence, other than sheep dung from some Altai sites, was thought to be the only real evidence for domestic animals (Parzinger 2006, 189, 195). But the more recent excavations of Kara-Tenes in the Altai recovered bones of ovicaprids (MNI 19), cattle (MNI 3), horse (MNI 2), and dog, and the remains of one wild boar

(Pogozheva et al. 2006, 23 / Погожева 2006, 23). Pogozheva notes similar faunas from other sites and summarizes the evidence indicating a predominance of sheep/goat with significant input from cattle and horse (including the finding of cheek-pieces). Although Afanasievo also lacks the camel, this is not critical, as we have no etymology for TB *\*koro* 'camel' so there is no reason to believe that it was necessarily brought with the Proto-Tocharians to the Tarim Basin. The wild species comprise Siberian deer, roe deer, wild cattle, elk, badger and marmot. One of the most extensive pre-Andronovo faunas from the Altai has been recovered from Kolyvanskoe I (MNI 213 domestic and wild animals), and it too revealed no evidence of domestic pig, although there were bones from four wild boars (Alekhin and Gal'chenko 1995 / Алехин и Гальченко 1995). In sum, while there is no evidence for the domestic pig in the faunas in the Yenisei-Altai, there is some evidence for boar hunting. The Afanasievo faunas are then congruent with what we reconstruct to Proto-Tocharian.

The lexical evidence for agriculture in Tocharian is small but nevertheless more than the archaeological evidence from the Afanasievo culture, of which there are merely indications of the presence of some grinding stones but as yet no evidence of any domestic cereals. Recent stable isotope analysis suggests that plants may have constituted up to 20% of the diet of Eneolithic and Bronze Age populations of the Minusink Basin, but there was no evidence for the consumption of millet until the Karasuk culture, c. 1500 BCE (Svyatko pers. comm.), and there is no direct evidence for the consumption of wheat or barley in the Afanasievo culture (there are wild plants that could have been consumed). In fact, there is a total absence of domestic cereals across all eastern steppe cultures prior to the Late Bronze Age Andronovo mega-culture (Fedorovka), and the evidence for cereals from the steppe and forest-steppe regions appears to date no earlier than the late second and early first millennium BCE (Anthony 2012, 16–17; Ryabogina and Ivanov 2011, 103). On the other hand, following a trajectory along what Michael Frachetti (2012, 15) has termed the "Inner Asian Mountain Corridor," wheat, along with millet, has been recovered from a cremation burial at the site of Begash in the northern Jungghar mountains in Kazakhstan (Fig. 6). The wheat, dated to c. 2300 BCE, has been interpreted as the product of an exchange system, presumably from the southwest of Central Asia.

Most of the reconstructed Tocharian material culture tends to be generic (and undiagnostic, e.g., club, knife), but the presence of inherited words for both gold and silver in Tocharian is of some interest. Both of these metals are attested within the Afanasievo culture (Masson and Merpert 1982,

330 / Массон и Мерперт 1982, 330; Parzinger 2006, 192), usually in the form of rings or earrings. A silver ornament has been recovered from Malinovy Log on the right bank of Yenisei north of Minusinsk and has been dated to c. 3400–2600 BCE (Bokovenko and Mityaev 2010, 18 / Боковенко и Митяев 2010, 18). Gold and silver objects are also known from the following Okunevo culture (Parzinger 2006, 306). Wheeled vehicles are a critical element of the Tocharian lexicon. The best evidence so far for wheeled vehicles is the recently excavated Afanasievo grave from Khurgak-Govi in Mongolia that is reputed to have been covered by the chassis of a wagon that has been radiocarbon dated to c. 2900–2500 BC (Kovalev 2008). This would not be unexpected given the pictorial evidence for wheeled vehicles on grave stele of the succeeding Okunevo culture (Gryaznov 1969, 61–62).

Among the architectural remains the most diagnostic terms are related to the concept of "enclosure." There is no direct evidence of enclosures associated with Afanasievo settlements, at least the few that have been excavated, which generally yield a few hearths or, exceptionally, some remains of dwellings, e.g., Kara-Tenesh (Pogozheva et al. 2006, 18–20 / Погожева 2006, 18–20). However, there has been a presumption that sites were enclosed by fences or walls, as their existence has been conjectured to explain the presence of enclosing walls around burials. Gryaznov (1969, 49) suggested that "the idea of erecting a wall to keep out hostile forces was extended to burial practises, and from the beginning of the Eneolithic period it became a regular practise in Siberia to build an enclosing wall round the tomb in order to protect the dead person against the forces of evil — and also to prevent them from returning from the realm of the dead to cause harm to the living." These enclosures tended to range from about 3 meters up to 16 meters in diameter and were erected out of upright stone (usually sandstone) slabs that stood up to about a meter in height. It might be noted that the following Okunevo culture does offer some evidence for circular stone walls on hilltops of uncertain function (Parzinger 2006, 306–309).

In general, the Afanasievo culture and its successors can account for the most diagnostic items of material culture found in Common Tocharian (wagons, gold, silver). It possesses all the items of domestic livestock, if one permits a later semantic shift from wild to domestic pig. On the other hand, it has so far failed completely to produce evidence for the domestic cereals that were known to the Proto-Tocharians. For wheat, for example, we would have to look outside the traditional cultural

trajectory of the Eurasian steppe cultures (Yamnaya-Afanasievo) to the site of Begash, with evidence for wheat that dates in the centuries just after the flourish of the Afanasievo culture.

A second major issue for us here is whether the early Yenisei-Altai steppe cultures provide a suitable source culture for the Early Bronze Age populations of the Xiaohe horizon. Here I will try to list the roster of comparanda, beginning with the connections suggested by Elena Kuzmina (1998, 68–71) and then augmented by whatever other parallels might be remotely plausible.

1. The clothing from the Xiaohe horizon is consistent with the clothing suggested for the Andronovo culture, i.e., it is of the general Eurasian steppe pastoralist type, with caftans, pointed hats, trousers, boots. This point can only be made if we project Andronovo clothing back to earlier cultures that antedated or were contemporary with the Xiaohe horizon. Also, the clothing recovered from the Tarim Basin through time is largely if not exclusively compared with other material that would render an Iranian (rather than Tocharian) identity (Yatsenko 2009).
2. Afanasievo (and Andronovo) both employed circular enclosures around their grave plots. Gumugou revealed exceedingly elaborate circular timber enclosures. While Afanasievo enclosures were indeed circular, those of the temporally more relevant Okunevo culture were routinely rectangular. Sokolova (2011, 30 / Соколова 2011, 30) notes that there are round enclosures associated with the Okunevo culture, but these invariably are mixed Afanasievo-Okunevo sites. It might be emphasized that the stone enclosures around burials of the Qiemu'erqieke culture are also rectilinear, usually rectangular (Kovalev 2012a; 2012b), and also make poor templates for Gumugou.

If the terminal date of Afanasievo still stands at c. 2500 BCE, these hybrid sites should long antedate any evidence that we have in the Tarim Basin. Indeed, unless the date of the Qiemu'erqieke culture can be put back, there is very little room for overlap between it and Afanasievo.

3. Use of timber roofing and bedding for burials. These are found in the Afanasievo culture, and there is some evidence for timber/log roofs (burnt) in the Okunevo culture as well (Sokolova 2011, 74 / Соколова 2011, 74).

4. Deposition of head and hooves of domestic livestock. These are also recorded for the Okunevo culture (Sokolova 2011, 10 / Соколова 2011, 10).
5. Burial in the so-called Yamnaya position, i.e., supine with legs flexed. This pose is found in the Afanasievo and Sokolova (2011, 75 / Соколова 2011, 75) attributes it to 98% of all Okunevo burials as well. Outside the Eurasian steppe cultures this posture is exceedingly rare, and it has been frequently employed as an indicator for steppe intrusions in eastern Europe (Harrison and Heyd 2007).
6. Use of copper for rings, awls, etc. These are found in both the Afanasievo and Okunevo cultures although the comparison here may be regarded as rather generic.
7. Similarity of domestic faunas. Both Afanasievo and Okunevo cultures reveal evidence of cattle, sheep/goat and horse.

To these might be added:

8. The baskets of the Xiaohe horizon may be compared to the bag-shaped ceramic vessels of Afanasievo. It should be noted that Okunevo ceramics, which are much closer in time to the Xiaohe horizon, have flat bases so can hardly be compared with baskets from the Tarim Basin. Moreover, the practice of depositing ceramics in both the Afanasievo and Okunevo cultures is absolutely routine, whereas the cemeteries of the Xiaohe horizon are aceramic. As ceramics were later produced in the same region as the Xiaohe sites, their earlier absence cannot be simply explained by the lack of appropriate raw material (Wang Binghua, pers. comm.), but is more likely to indicate a cultural difference.
9. Masks from Xiaohe may be compared with masks depicted on stelae of the Okunevo culture and on small stone idols, some of which have also been found in burials (Vadetskaya 1967, tab. 15 / Вадецкая 1967, таб. 15).
10. Okunevo stelae, up to 5 m high, may be compared with the tall posts accompanying Xiaohe burials. The stelae now number in excess of 300 (Sokolova 2011, 133 / Соколова 2011, 133). The only other stelae, markedly different from the Okunevo culture (Kovalev 2012a, 150), are those

from the Qiemu'erqieke "phenomenon," and they make an even poorer template for the timber posts of Xiaohe.

11. Skull deformation is found among the Okunevo people (and similar to that found among the Kalmyk Yamnaya) (Gromov 2002, 30–31 / Громов 2002, 30–31) that might be associated with a similar practice attributed to the Tocharians in the historical period. How much earlier this might have been employed in Xinjiang is a question for the physical anthropologists. Skull deformation is a fairly widespread phenomenon and need not indicate a genetic link.
12. The genetic signature from aDNA from burials at Xiaohe (Li et al. 2010) is consistent with the aDNA recovered from Andronovo burials of the Yenisei region (Keyser et al. 2009) and Eastern Europe, i.e., they suggest a population from the Eurasian steppelands.

The list of comparisons contains a number of items so generic (clothing, range of domestic fauna, basket-shaped pots, simple copper tools) that they alone do not provide convincing evidence of links. As we have seen, the use of enclosures is problematic, as those of the steppe were of stone while those at Gumugou were of wood, although a shift in the availability of material might be enough to explain the differences in enclosures as well as the comparison between stone stelae and timber posts. On the other hand, the dates of the Afanasievo culture terminate well before our earliest evidence for the Xiaohe horizon, and the following steppe culture, the Okunevo, is characterized by rectangular and not circular enclosures. The burial posture is perhaps one of the strongest potential links in that it is unusual outside of the steppelands where it is intimately associated with cultures that emerged earliest in the Dnieper-Volga region. That the aDNA for males of Xiaohe could be most easily linked to the same region (although not exclusively so) is perhaps further support for a steppe origin. On the other hand, there are also profound differences, the most serious of which is the absence of ceramics from the Xiaohe burials, at a time when ceramics are often the only burial good known in Afanasievo graves (Vadetskaya 1986 / Вадецкая 1986).

In sum then, the steppe cultures can produce some analogues to material culture and behavior of the Xiaohe horizon, but these are to a considerable extent overwhelmed by the sheer novelty of much of the Xiaohe burial ritual. Unless the issue of domestic cereals can be resolved

between the steppe and Tarim sites, it is difficult to see the steppelands serving as the primary source of the Xiaohe culture.

#### **The Fourth Requirement**

An evaluation of the fourth requirement, the ability to trace the cultural path of the prehistoric Tocharians back to a geographic source congruent with their position within the Indo-European language family, would greatly exceed the size and scope of this paper. Nevertheless, there are some matters that require at least some minimal comment, especially as they reflect the author's own solution to Tocharian origins (Mallory and Mair 2000, 294–296). I have argued that we can follow a cultural trajectory from an Indo-European homeland in the Pontic-Caspian steppe and forest-steppe eastwards across the steppelands to the Minusinsk Basin and the Altai and then south through the Jungghar Basin and into the Tarim Basin. This involves the following sequence of cultures: Yamnaya > Afanasievo > Qiemu'erqieke > Gumugou. We might regard this as the classic Eurasian steppe trajectory, a hypothesis that since has received some aDNA support (see above). As a cultural sequence, this chain of cultural developments is now far less robust than was imagined earlier. The case for deriving Afanasievo from Yamnaya now appears to be strengthened by aDNA analysis, but the links between Afanasievo and Qiemu'erqieke may be only sporadic cultural contacts, as argued by Kovalev (2011; 2012b), and a genetic relationship between Qiemu'erqieke and Gumugou (or Xiaohe) is barely supportable.

In the analysis above I commented on how the Xiaohe culture made a better fit than the Afanasievo culture in terms of meeting some of the major requirements of a linguistically reconstructed Proto-Tocharian culture. A central issue here is that Xiaohe and the related sites reveal clear evidence for domestic cereals, while none has been found in either the Afanasievo culture nor its successor, the Okunevo culture. It should, of course, be emphasized that in the absence of routine flotation, the recovery of seeds from the steppe burials is nearly impossible, and there is no evidence that this has been carried out. Moreover, the lack of evidence for settlement sites, a location far more likely to produce domesticated cereals, is another reason to be cautious that here we may well have merely absence of evidence rather than evidence of absence. We have also seen that the site of Begash did possess wheat, thereby indicating that a cultural trajectory from the north that by-passed the

Minusinsk Basin might be the source of domestic cereals south into the Jungghar and Tarim basins. Indeed there must have been a routeway for the domestic bread wheat of Central Asia to reach western China as early as the third millennium BCE (Betts pers. comm.). But here we must emphasize that this does not provide an "escape clause" for the steppe theory, in which we could argue that migrating members of Afanasievo or Okunevo acquired cereals from the settlers of Frachetii's "mountain corridor" before entering the Jungghar and Tarim basins. The problem is that this "solution," no matter how attractive archaeologically, does not resolve the linguistic aspects of the issue: the Tocharians must have carried not only domestic cereals into the Tarim Basin but the inherited Indo-European vocabulary associated with agriculture as well. If the Eurasian steppe trajectory could not itself deliver domestic grains to the Tarim Basin, it also fails to support its identification with the ancestors of the Tocharians. The Proto-Tocharians cannot have inherited their language from a distant steppe homeland in the Pontic-Caspian and then adopted both domestic plants and the Indo-European names for them (shared throughout the Indo-European world) later along the way. They must have carried both the plants and the Indo-European names for them (Mallory 2012, 149–152).

## Conclusions

This paper has not only failed to provide a solution to the problem of Tocharian origins—it has even helped undermine the author's earlier solution (Mallory and Mair 2000). Many of the inadequate solutions to the problem of Tocharian origins probably stem from a tendency to take unacceptable shortcuts in developing arguments (e.g., Tocharians are "Westerners," the Tarim mummies are "Westerners," therefore, the Tarim mummies must be Tocharians). The tendency has been, at least to some extent, driven by the sheer lack of archaeological evidence, but this is now being dramatically redressed by archaeologists working in Xinjiang. In tackling the issue anew I have tried to approach the entire problem more systematically by listing the criteria that I believe are required of any archaeological solution to the problem. I briefly revisit these below. To reach a solution, it would be necessary:

1. *To establish the physical and cultural remains of known historical Tocharian-speaking peoples.* It can be seen that at the present we lack the type of Tocharian archaeology that would permit



us to discern the historical Tocharians through the veneer of urbanism or Buddhism and the international styles in which these were expressed. This might be resolved, at least to some extent, if we had better knowledge of the formation of the northern oasis towns comparable to what we now have for Yumulak Kum.

2. *To trace the physical and cultural remains of historical Tocharians retrospectively into the prehistoric period.* The key obstruction here is that there does not seem to be a valid way by which we might distinguish between a prehistoric speaker of Iranian and one of Proto-Tocharian. The material culture of the Iron Age cemeteries and the few Bronze Age settlements of the region can all be attributed to the Iranians. This, it should be emphasized, is not an issue of "fact" but rather the paradigm within which we seem to be trapped, i.e., any cultural connection with the north or west appears to be with a region where we expect to find Iranian speakers. The reconstructed lexicon also does not serve us very well in determining any critical differences between the reconstructed culture of the Iranians and Tocharians. To be sure, we could adduce finer levels of cultural comparison. For example, we reconstruct for the Indo-Iranians a sacred drink (soma/haoma) which, if its botanical identification among the Iranians be a guide, was ephedra, which is known from special vessels in the BMAC of Turkmenistan, as well as its ubiquity in the Xiaohe horizon (Parpola 2012a, 250–251). If we applied the use of ephedra as a cultural indicator of the Iranians, we would then have to place them in the Tarim Basin by 2000 BCE, which would further reduce any windows for identifying Proto-Tocharians.
3. *To trace the ancestors of the "prehistoric Tocharians" to a location outside of Xinjiang.* The obvious issue here is that if we cannot identify prehistoric Tocharians *within* Xinjiang, then it will be impossible to tie them to an external origin. This paper has suggested that we seem to be dealing with one of the following phenomena:
  - a. The prehistoric Tocharians are already well known to us from Iron Age cemeteries such as Chawuhugoukou, and their external origins can be traced, perhaps, to the Eurasian steppe cultures of the Iron Age, where we find similar burial practices. In this way the Tocharians are simply a linguistic group who occupied the Eurasian steppe and maintained their language although they apparently absorbed much of their

material culture and behavior from their Iranian neighbors. Although Tremblay's conclusion that the earliest evidence for Tocharian-Iranian contacts coincides with his "Old Sakan," this does not necessarily require that these contacts took place exclusively within the Tarim Basin, as these contacts could have occurred further north in the steppelands during the period that Parpola (2012a, 223) assigns to Late Proto-Iranian (1500–1000 BCE), which should coincide with the date of early Eastern Iranian.

The problem with this model is that it implies that the ancestors of the Tocharians were situated somewhere where they avoided contacts with earlier stages of Indo-Iranian and only began their association with this branch later, when the Eastern Iranians had emerged. In short, it does not indicate where the Tocharians might have been before they came into contact with the Saka, so it does not really get us much further toward Tocharian origins.

- b. The prehistoric Tocharians are already well known to us from Iron Age cemeteries such as Chawuhugoukou. The Tocharians had appeared south of the Tianshan much earlier than the Iron Age but absorbed material culture and behavior from Iranians over the course of the Early Iron Age within Xinjiang, so that by the Iron Age they were indistinguishable from them archaeologically. Any search for Tocharian origins should be rooted in earlier cultures, e.g., Xiaohe, and not those of the Iron Age. In short, just as the historical Tocharians are viewed through an urban Buddhist filter, the Iron Age Tocharians are obscured by an Iranian filter.

One of the obvious problems with this model is that it requires us to establish the origin of the Xiaohe horizon, and, while there are a few comparisons that can be made with cultures from the Altai and Minusinsk Basin, the evidence is not really convincing. Moreover, it is also clear that Xiaohe is entangled with the spread of domestic cereals from west to east or, at least, a recipient of such exchanges, and we are still far from establishing the precise route of this dispersal.

- c. The prehistoric Tocharians are basically unknown to us. They moved into the oases along the Tarim river and are buried under the foundations of the now increasingly

modern towns of Xinjiang. In short, we have been looking in the wrong place.

The problem with this approach is that we do not expect the urban centers of the northern Tarim to date much earlier than the first centuries BCE, and it seems unlikely that Proto-Tocharian entered the Tarim Basin so late. It seems far more likely that they entered earlier than this and are to be accounted for in hypothesis (a) or (b) above.

4. *To trace the cultural path of the prehistoric Tocharians back to a geographical source congruent with their position (temporal and spatial) within the Indo-European language family.*

Without a firm anchor immediately outside the Tarim Basin one can hardly evaluate Tocharian dispersals within the general framework of Indo-European expansions. From an archaeological perspective, there appear to be (at least) three competing models.

- a. The Eurasian steppe model (Early Bronze Age) that sets the Indo-European homeland in the Pontic-Caspian region and identifies the ancestors of the Tocharians as members of the earliest eastward expansion of steppe pastoralists from the Urals eastwards to the Altai and Yenisei, i.e., the Afanasievo culture (Mallory and Mair 2000; Anthony 2007, 307–311). This model satisfies those who regard Tocharian as a very early departed language, geographically peripheral to the other Indo-European branches, and eliminates the problem of dating contacts between Tocharians and Indo-Iranians to any period earlier than the entry of the Saka into the Tarim Basin. Among its major problems are: 1) it lacks any evidence of the suite of domestic cereals which the ancestors of the Tocharians should have known; 2) while there may be some Afanasievo artifacts associated with the Qiemu'erqieke culture in the Junghhar basin, these are really totally different cultures, so there is no evidence for an Afanasievo migration south through the Junghhar Basin towards the land of the historical Tocharians; 3) the archaeological case for contacts between the Afanasievo and later Okunevo cultures with the Early Bronze Age culture of the Tarim Basin (Xiaohe) is, other than burial posture, generally weak and circumstantial.
- b. The Eurasian steppe model (Middle/Later Bronze Age) that sets the Indo-European homeland in the Pontic-Caspian region but identifies the ancestors of the Tocharians

as a later Bronze Age phenomenon that followed after the Afanasievo culture, e.g., an element of the Andronovo culture or some other later culture (Kleyn's Fatyanovo-Karasuk; also Kristinsson 2012). This type of solution might satisfy those who prefer to see the ancestors of the Tocharians more closely related to the European languages, and if the Tocharians had adopted the material culture of steppe Iranians, that makes it easier to argue for an immigration of Eurasian steppe populations into the Tarim Basin, since there is abundant evidence for Andronovo and Karasuk material culture in Xinjiang. By the later Bronze Age period one might also believe that the issue of cereal agriculture could be more easily addressed, as there is evidence for cereal agriculture among the Andronovo tribes. Among its major problems are: 1) it sets Tocharian origins in Europe in geographical areas (northern Europe, central Europe, the Balkans, the forest area of Russia) from which we would far more easily derive the ancestors of the various European branches; 2) other than Kleyn's attempt to tie the material culture of Fatyanovo with Karasuk, there is no archaeological evidence adduced to support such late migrations of Tocharians across the eastern steppe; 3) it generally results in the Tocharians occupying an archaeological staging area (Andronovo, Karasuk) that we would otherwise naturally assign to the Iranians or some other group. It is true that Andronovo is a higher taxonomic label than "culture" and could well embrace a variety of languages or language groups over its vast area, but, if the Proto-Tocharians were an element of the Andronovo cultural historical region (Kristinsson 2012), we will need to explain why they borrowed vocabulary only from a presumably later sub-branch of Eastern Iranian rather than Indo-Iranian itself. Moreover, we would also need to describe how they came to be absorbed into the Andronovo world and where their place of origin was before this happened.

- c. The Central Asian model sets the Indo-European homeland anywhere from eastern Anatolia (Gamkrelidze and Ivanov 1995) to Central Asia (Sverchkov 2012 / Свѣрчков 2012). The potential advantages of this model are that it locates the ancestors of the Tocharians closer to the Tarim Basin and so reduces the length of any migration; it can accommodate cladistics that either place the ancestors of the Tocharians on the

periphery (but only if one presumes that the Afanasievo culture is more closely tied with Central Asia than the European steppe), or it can position the Tocharians geographically adjacent to Europeans, who are then presumed to enter Europe from southeast of the Urals. As the earliest wheat in China is identified as bread wheat, the same type as grown in south Central Asia, it provides a more convincing link between China and the West in terms of cereals than does the Eurasian steppe. Among its problems are: 1) it fails to provide convincing evidence that the European steppe cultures (which are integral to this model, which also must explain the spread of the Indo-European languages all over Europe) are derived from east of the Caspian Sea—there are, for example, far more proximate and believable sources for the earliest domestic animals and cereals of the steppe region in the areas adjacent to the European steppe than can be supplied by the Central Asian model (Mallory 2014); 2) the earliest horizon of Central Asian expansions across Central Asia and south Siberia are associated with the Kelteminar culture, which suffers from the same absence of domestic cereals as does the Early Bronze Age Eurasian steppe cultures.

- d. The combined Steppe and Central Asian model that sets the Indo-European homeland in the Pontic-Caspian but argues that steppe populations intruding into the indigenous agricultural societies of Central Asia adopted many elements of material culture without undergoing language shift. This model is employed, for example, to explain the Indo-Aryans or segments of the Iranians as the hybrids of the Andronovo and the BMAC of Turkmenistan (e.g., Mallory 1998). The advantage of such a model would be that it would allow Eurasian pastoralists to maintain contacts with settled farmers and, presumably, assist them in the retention of the inherited Indo-European vocabulary concerning agriculture and domestic plants. Moreover, it might also provide a "steppe" connection to any model such as Sverchkov's that derives the Tocharians from Central Asia. This would require the entry of steppe people *prior* to the Andronovo culture.

Evidence for earlier contacts between Eurasian steppe cultures and the settled farmers of south Central Asia is sparse, but it does exist. Afanasievo sherds, for example, have been reported from Gonur Depe in Turkmenistan (Avanesova and Dzhurakulova 2008, 28 / Аванессова и Джуракова 2008, 28) and, more importantly, there are the finds of both Afanasievo (of Yenisei provenance) and Yamnaya remains in a ritual complex at Zhukov, 16 km from Samarkand (Avanesova and Dzhurakulova 2008 / Аванессова и Джуракова 2008), coupled with material compatible with Sarazm II (c 3200–2900 BCE). The complex can be compared with similar Afanasievo cult sites in both the Yenisei and Altai (described in Parzinger 2006, 191, 197). The excavators also see such evidence as adumbrating the Afanasievo-compatible burials of Sarazm IV (c 2300–2000 BCE). No one seems certain precisely how one might link the European steppe, the Zervashan Valley of Tajikistan and the Minusinsk Basin together (mobile traders from the European steppe, a single interaction sphere of exchange relationships, Frachetti's "Intermountain Corridor"?), but there is clearly evidence in both the Afanasievo and subsequent Okunevo periods for some form of mutual contact. As I indicated above, the reason for suggesting this model is that it places steppe populations in an area where cereal agriculture was well established, so it reduces both the spatial and temporal lacuna between their homes in the Pontic-Caspian region and their possible approach to the Tarim Basin. Unfortunately, the spatial and temporal lacuna with respect to domestic plants now appears not merely between the Urals and the Altai but even farther, between the Dnieper and the Altai (Mallory 2014). I do not know how we are going to be able to resolve these issues, but if we really want to trace the Tocharians to their origins we might paraphrase the immortal lines of 'Deep Throat' and "follow the cereals."

The results of this survey have, I hope, at least helped elucidate some of the main archaeological and linguistic issues in resolving the problem of Tocharian origins and shown what needs to be done if we are going to develop a credible solution to this problem.

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