A Multi-Directional Bridge? The Geo-Strategic Significance of Nakhchivan during the Late Chalcolithic (4500–3500 BCE)

Catherine Marro, Veli Bakhshaliyev, François-Xavier Le Bourdonnec, Marie Orange

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The transfer of knowledge and technologies between East and West in the Bronze Age

Brücke zwischen den urbanen Zentren Mesopotamiens und der pontischen Steppe im 4. und 3. Jahrtausend v. Chr

Der Transfer von Wissen und Technologien zwischen Ost und West in der Bronzezeit

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A Multi-Directional Bridge?
The Geo-Strategic Significance of Nakhchivan during the Late Chalcolithic (4500–3500 BCE)

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Abstract

Late prehistoric Caucasia is located between the incipient urban, agrarian states of 4th millennium Mesopotamia and the pastoral-based, hierarchical communities of the Eurasian steppes. Renowned for its wealth in natural resources, it has recently been envisaged as a potential bridge transmitting goods and knowledge between Eurasia and the Near East. This paper summarizes the cultural evolution of the South Caucasus between ca. 6200 and 3500 BCE with a view towards emphasizing its geo-strategic position during the Late Chalcolithic period (ca. 4500 – 3500 BCE). From a secluded region bypassed by major circulation routes during the Neolithic, the South Caucasus evolved into a kind of economic hub, as shown by a remarkable increase in the number of settlements belonging to the Chalcolithic, many of which display evident links with Mesopotamia, Iran or the Black Sea region. This striking evolution probably stems from the rise of extractive metallurgy, which developed in the Caucasus some time during the 5th millennium BCE.

Drawing on the evidence that has been collected in Nakhchivan over the past 15 years, in particular on the obsidian circulation networks, we argue that the exchange of goods and knowledge during the Chalcolithic was in the hands of mobile pastoral groups, which resulted into a chain of interconnected networks of varying extents. According to this scenario, the circulation units at the beginning of the larger, interregional networks did not necessarily have any contact with the end-line. From the available evidence, the South Caucasus during the Late Chalcolithic appears to have been a kind of hub, a central place where different communities met and interacted: this is particularly visible in Nakhchivan, where mobile herders from Iran, among other groups, established links between the communities living in Eastern Anatolia and those of the Lesser Caucasus piedmonts.

Introduction

The Caucasus, which was considered as a borderland in western scholarship during most of the 20th century, has been the focus of intensive international research for the last twenty years: it now occupies a central place in southwestern Asian archaeology. New projects, combined with a reassessment of the data retrieved from past excavations, have led to a complete shift in analytical paradigms in several fields of Caucasian archaeology, in particular as concerns the Late Chalcolithic period (ca. 4500–3500 BCE)[1]. The picture that emerges from the work so far carried out, in particular in the South Caucasus, is that of a complex interplay developing in the course of the 5th millennium BCE, which involves Middle and Near Eastern social groups, but also a Southeast European component that remains to be identified. Whatever the parties involved in the interactions between the Caucasus, Europe and the Near and Middle East, these relationships resulted in a shift in interregional dynamics that was coeval with the development of extractive metallurgy[2].

1 Marro 2010; Marro 2012; Gailhard *et al.* 2017.

2 Marro submitted.

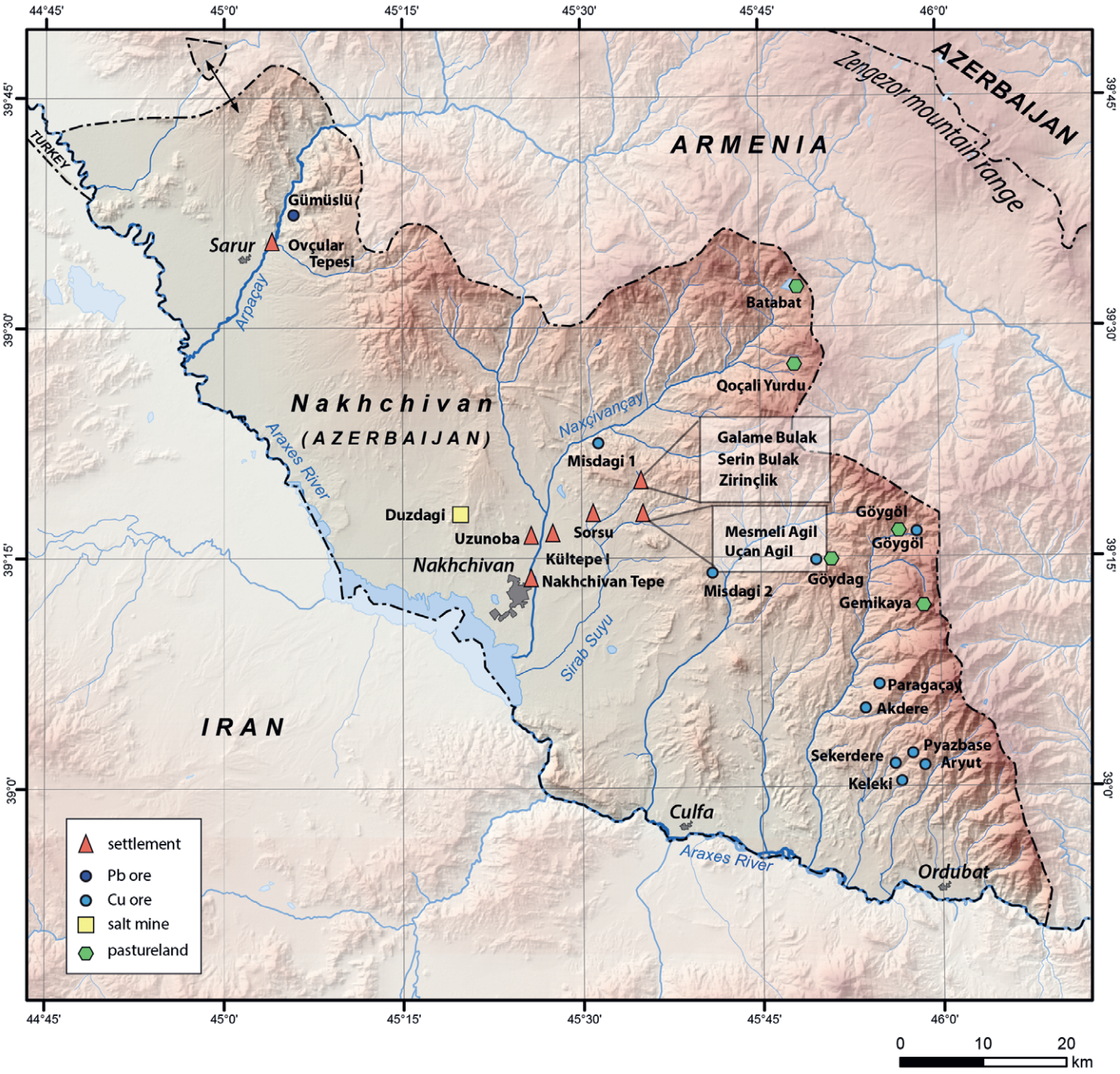


Fig. 1 Nakhchivan. Archaeological sites mentioned in the text.

This paper aims at describing the historical context in which these new dynamics developed: by sketching the cultural evolution of the Caucasus over the *longue durée*, we hope to emphasize the significance of the changes at work during the Chalcolithic as a whole (ca. 4900–3500 BCE), which appears as a key period in Caucasian history. Then we will examine the processes underlying the formation of new circulation networks during the Late Chalcolithic period itself. To address this task, we will marshal the data produced by many different international projects working on the South Caucasus, with a special focus on the work that has been carried out in Nakhchivan over the last 15 years (*Fig. 1*).

The Caucasus during the Late Chalcolithic: a border or a bridge?

The Caucasus, and more generally the highlands north of the Oriental Taurus Mountains, were considered to be outside the limits of Oriental archaeology until the chance discovery of the settlement of Leilatepe (Azerbaijan) in 1984. Through the excavation of Leilatepe, a flat site located at 100 m asl in the Kura Basin, a cultural complex was brought to light that displayed evident ties with the Late Chalcolithic "Amuq F" Culture, which is usually considered to be at home in Northern Mesopotamia and the Northern Levant. The term "Amuq F" refers to an archaeological assemblage that was first described by Robert and Linda Braidwood on several sites excavated in the Amuq Valley in Turkey in the middle of the 20th century[3]. It also refers to a time period that has been dated to the first half of the 4th millennium BCE. The ties between Leilatepe and the Amuq F sites are perceptible in the ceramic repertoires, but also in the building techniques, the funerary practices and many other fields of the material culture[4]. The similarities between the two cultures are so striking that in a short, but famous, article published in 1985, the occupants of Leilatepe were defined as "migrants" from Mesopotamia by the Soviet archaeologist Ideal Narimanov. This interpretation was later endorsed by several other archaeologists, in particular by Tufan Akhundov[5].

Interestingly enough, what became known as the "Leilatepe Culture" also displays some links with the famous Maikop cultural complex that was brought to light in the north Caucasus at the end of the 19th century. The Maikop Culture, which had first been dated to the middle of the 3rd millennium BCE, turned out to be contemporary with the Leilatepe assemblage[6]. Moreover, it appeared that the Maikop Culture displayed several ties with the early Uruk horizon at home in South Mesopotamia, a cultural complex that also dates back to the beginning of the 4th millennium BCE.

The ex-oriente-lux paradigm

Until the availability of new radiocarbon dates, thanks to which major chronological issues relating to the Caucasian Chalcolithic were finally settled, the analogies perceived between Caucasian, Levantine and Mesopotamian Late Chalcolithic cultures were interpreted through a classical, *ex-oriente-lux* paradigm. According to this paradigm, these analogies were mostly explained by the migrations of human groups from Mesopotamia, presumably prompted by the search for metal ores[7]. This scenario relied on the assumption that extractive metallurgy had first been mastered by Near Eastern societies, which were deemed to be more sophisticated, thus more knowledgeable, than Caucasian groups. Other scenarios advocated the existence of seasonal migrations linked to pastoralism, but without postulating the actual search for metal ores[8]. In both cases, however, a Mesopotamian origin was put forward to explain the similarities evidenced between the Leilatepe, Maikop and Amuq F cultural assemblages, an origin that was envisaged either as the result of migrations or just as some kind of "influence"[9]. As concerns the Leilatepe Culture in particular, most of its salient traits (pottery, funerary practices, architecture…) were considered to be a "foreign intrusion" into the Caucasian world, and were identified as basically "Mesopotamian"[10].

One of the reasons explaining this view was linked to the fact that many of the Leilatepe Culture's major features seemed to have "suddenly developed"[11]. This was the case of the chaff-tempered pottery found at Leilatepe for instance, but also of the rectangular mud-brick architecture brought to light at both Leilatepe and Berikldeebi

3 Braidwood/Braidwood 1960.
4 Marro 2010.
5 Narimanov 1985; Akhundov 2007.
6 As concerns the chronological debate on the Maikop Culture, see Lyonnet 2000; Lyonnet 2007a.
7 Akhundov 2007. See Lyonnet 2007b, 137 for a short bibliography on this subject.
8 Marro/Özfirat 2003; Marro 2007.
9 Lyonnet 2007b, 148.
10 Akhundov 2007; Museyibli 2007; Lyonnet 2009, *passim*; Museyibli 2014.
11 Lyonnet 2009, 10.

in Georgia, as well of the funerary customs, in particular the use of infant burial jars attested at a growing number of Caucasian sites, such as Böyük Kesik[12]. All of these practices were deemed to be "alien" to Caucasian traditions, and were thus interpreted as the outcome of influence or migrations.

But this interpretation also arose from the general confusion that presided over the definition of the "Chalcolithic" and the "Neolithic" periods in the Caucasus at large. The earlier sequence of a key site such as Kültepe I in Nakhchivan, for instance, had been dated to the "Chalcolithic", after having been first identified as "Neolithic" by its excavator, Osman Abibullaev[13]: this view was later fully or partly endorsed by many colleagues[14]. As a result, the significance of Late Chalcolithic cultures, such as the Leilatepe complex, was established by comparing the latter with the earlier "Chalcolithic" *faciès* of Kültepe I. Since these two horizons are in fact separated by a chronological gap of about 1000 years[15], the unsurprising outcome of this comparison was that there were no relationships between the two. This undeniable fact became the (often unconscious) ground supporting the belief that the Leilatepe Culture was "foreign" to Caucasian traditions.

It is therefore clear from the above that the main reason lying at the base of this paradigm was simply the lack of available information on the Caucasian Chalcolithic. As a result, it was soon to be refuted by the data provided by the excavations at Ovçular Tepesi and Mentesh Tepe (Period III), which are located respectively in the Kura and the Araxes valleys in Azerbaijan.

The Chaff-Faced-Ware interaction sphere

With the excavations at Ovçular Tepesi and Mentesh Tepe, it appeared that an earlier version of most Leilatepe cultural features was in fact present in several Caucasian settlements dated to the second half of the 5th millennium BCE.

At Ovçular Tepesi, in particular, which was excavated by a French-Azerbaijani team between 2006 and 2013, occupation layers belonging to a phase immediately preceding the Leilatepe period were exposed over a large area[16]. Ovçular Tepesi is a flat site located over the summit of a natural hill on the left bank of the Arpaçay River, about 10 km from the confluence with the Araxes River (*Fig. 1*). Its earliest occupation phase (Phase I) dates back to ca. 4400 BCE and seems to have been rather short-lived, perhaps a few years. It consisted of a village of free-standing huts, probably made of wood and organic material (hides?), of which only a few post-holes and a number of stone sockets remained. These huts were partly buried in the ground, an architectural technique that is still being used today by mobile groups in the Caucasian uplands[17]. The first occupation level of many Caucasian sites, whether they belonged to the Neolithic or to the Chalcolithic period, often consists of such dwellings; on certain occasions, they gave way to solid buildings made of different materials (mud, wood and stone …), when the mobile group settled down. This is the case at Ovçular Tepesi in Phase II, which is characterized by a multicellular, mud-brick architecture with occasional stone foundations. At Ovçular Tepesi three different sub-phases belonging to Phase II, which correspond to three successive villages, were brought to light. Just like those in Leilatepe, the houses in Ovçular Tepesi in Phase II recall the architecture of Chalcolithic Mesopotamia in their mud-brick modules (25 cm x 50 cm x 9–10 cm) and their rectangular shapes; they display no similarities whatsoever with the local, earlier Neolithic buildings. The end of the Late Chalcolithic occupation at Ovçular Tepesi has been radiocarbon-dated to the very beginning of the 4th millennium BCE (ca. 3900 BCE).

12 For a recent bibliography on these matters, see Marro/Yılmaz 2018.
13 Cp. Abibullaev 1959; Abibullaev 1982.
14 E.g. Seyidov 2003.
15 For a preliminary report on the new round of excavations recently carried out at Kültepe I, see Marro *et al.* 2019.
16 More than 2350 m² were brought to light. See Marro/Bakhshaliyev/Ashurov 2009; Marro/Bakhshaliyev/Ashurov 2011.
17 Marro submitted.

But the link between the Ovçular Tepesi and the Leilatepe cultures is even more visible through their ceramic repertoires: in both cases these assemblages are mostly characterized by chaff-tempered pottery, which at Ovçular Tepesi often displays a heavily chaff-faced surface, hence its label Chaff-Faced-Ware[18]. A crafting technique frequently attested at Ovçular is the use of a comb to even the vessels' surfaces; but this tool was also sometimes used with a decorative purpose. Relief-decoration, which may appear as a series of knobs or as a circular band around the shoulder, with or without comb impressions, was used on a common basis, especially on storage jars. Most vessels have a globular shape with a round base and an everted, simple, sometimes tapering rim. Beaded rims only appear at the end of the stratigraphic sequence, which also roughly corresponds to the disappearance of the combed surfaces: with the wane of the Ovçular Tepesi Culture, the comb is no longer used, except perhaps on an occasional basis by a few Kura-Araxes potters.

The important point here is the partial overlap of the chrono-stratigraphic sequences of Ovçular Tepesi, Leilatepe and Böyük Kesik, as illustrated by the evolution of their ceramic repertoires: beaded rims, which only develop at the end of the Ovçular sequence, are the norm at Böyük Kesik. This is also the case at Leilatepe itself. Conversely, relief decoration, which is frequent at Ovçular Tepesi, is attested but said to be rare at Böyük Kesik[19].

A similar case is illustrated by the so-called "potters' marks". These marks, which are well-known in the Northern Levant and Upper Mesopotamia, have been found on several vessels at Böyük Kesik and Leilatepe, but only one example was found at Ovçular Tepesi[20]: it comes at the very end of the stratigraphic sequence. In short, all of these features concur to suggest that the ceramic assemblage of Ovçular Tepesi is a forerunner of the Leilatepe pottery.

When this interpretation was first put forward in an article written in 2010[21], information

Fig. 2a Early pottery of the Ovçular Culture found at Uçan Ağıl (ca. 4600 – 4400 BCE).

Fig. 2b Early pottery of the Ovçular Culture found at Bülov Qayası 2 (ca. 4600 – 4400 BCE).

18 A term originally coined by Braidwood/Braidwood 1960.
19 Museyibli 2007, 70.
20 Marro 2010, Figs. 2; 3,5.
21 Marro 2010.

on the Caucasian Chalcolithic was still very limited: virtually nothing was known about the Caucasian societies belonging to the first half of the 5th millennium BCE. This situation has somewhat changed since the excavation of Uçan Ağıl, a small camp-site located at 1200 m asl in the Sirab piedmonts in Nakhchivan (*Fig. 1*)[22]. This site has yielded a series of occupation levels that encompass the 4900 – 4400 BCE time span: most interestingly, a pottery that looks very similar to the Ovçular assemblage was found in the levels dated ca. 4600 – 4400 BCE by radiocarbon dates. As at Ovçular, this pottery is both chaff-tempered and chaff-faced, while the vessels' shapes and the decoration concept are similar: we are faced with globular-shaped jars, decorated with a circular band in relief around the shoulder. The decoration range, however, is much narrower, since these bands are either plain or decorated with finger impressions (*Fig. 2a–b*); comb impressions seem to be unknown. Thus, it is now clear that in the Caucasus, the Chaff-Faced-Ware trend dates back at least to the middle of the 5th millennium BCE.

As with the architecture, the pottery from the Ovçular Tepesi Culture displays many common traits with the ceramic repertoires attested during the same period in Mesopotamia or the Northern Levant (ca. 4600 – 3900 BCE), as visible through certain shapes and certain decoration types, and of course through the almost systematic use of chaff as temper[23]. But these common traits should not be assumed to originate from Mesopotamia. Quite the contrary, some of them seem to be at home in the Caucasian world, or even in the Eurasian steppes: this is the case of the comb decoration, for instance, although it is often considered to be a typical feature of the Mesopotamian Gawra Culture[24]. The use of a comb for decorative or technical purposes is actually attested on a frequent basis on the northern side of the Greater Caucasus since at least the middle of the 5th millennium BCE[25]. This technique appears to be more Caucasian than Mesopotamian; it might even has derived from the Eurasian steppes (see below).

All in all, it is clear that the grounds on which a presumed Near Eastern origin has been posited for the Chaff-Faced-Ware commonly found on Late Chalcolithic Caucasian sites are questionable at best[26]. If the processes that ensured the formation of similar – but not exactly identical – ceramic assemblages in the highlands, the Northern Levant and Northern Mesopotamia[27] remain largely unknown, it appears that these regions were part of a common interaction sphere, which has been called the Chaff-Faced-Ware oecumene, or Chaff-Faced-Ware interaction sphere, by the first author of this article[28].

To conclude, we may say that the Leilatepe cultural complex results from a local development, not a migration wave. This complex took its roots in the Ovçular Tepesi Culture, whose earliest steps have recently been found in the Sirab area at Uçan Ağıl in Nakhchivan[29]; they have been dated to the 4600 – 4400 BCE time span.

Judging by the available evidence, these dates correspond to the beginning of the Chaff-Faced-Ware oecumene in the Caucasus. It should be pointed out that this is also the case in Northern Mesopotamia: the beginning of the Late Chalcolithic 1 period, when the Chaff-Faced-Ware first appeared in the lowlands, has recently been dated back as early as 4600 – 4500 BCE, as shown by the latest radiocarbon readings from Tell Zeidan and Surezha[30]. This of course supports the view positing that the highlands (Eastern Anatolia and the Caucasus) and the lowlands (Northern Levant and Northern Mesopotamia) shared the same dynamics, whose drive will be analysed in the following paragraphs.

22 The excavation of Uçan Ağıl is part of the work conducted in Nakhchivan by Veli Bakhshaliyev and Catherine Marro since 2006.
23 Gülçur/Marro 2012.
24 Marro/Bakhshaliyev/Ashurov. 2011, Fig. 17.
25 Kotova 2008.
26 For more details, see Marro 2010; Marro 2012.
27 Marro 2012.
28 Marro 2010.
29 Please note that a similar pottery is also attested at Bülov Qayası and Uzunoba in the same region.
30 Stein 2012 and personal communication to C. Marro.

The significance of the Chaff-Faced-Ware interaction sphere over the *longue durée*

The Chaff-Faced-Ware interaction sphere, which seemingly developed around the middle of the 5th millennium BCE, corresponds to a time period, during which the Caucasus was clearly part of an economic (?) system that encompassed contrasting territories. The significance of this interaction sphere can only be assessed by comparing its extension with the circulation networks that prevailed in the centuries before the Chaff-Faced-Ware oecumene was established; that is, during the Neolithic period.

The Caucasus during the Neolithic period (6200–5000 BCE): far from the maddening crowd

The "Neolithic way of life" developed fairly late in the Caucasus in comparison with the Near and Middle East, in particular with the Fertile Crescent, whose eastern wing is located less than 500 km from the Araxes Basin. In spite of this relative proximity, the first Neolithic sites so far known in the Caucasus only appeared at the end of the 7th millennium, ca. 6200 BCE in the case of Kültepe I[31], Aknashen or Kiçik Tepe[32]. Haci Elamxanli Tepe probably dates to a slightly later period, ca. 6000 BCE[33]. The most striking fact about the first Neolithic sites so far known in the South Caucasus is that they seem to have sprung up overnight, without any trace of a genesis. This is suggested by – among other things – the subsistence strategies of the earliest settlements, all of which relied upon herding and agriculture from their onset. For this reason, the adoption of a Neolithic way of life in the South Caucasus has often been considered as the result of migrations, possibly from the Near or Middle East. However, the evidence supporting this scenario is still rather scanty, except perhaps in the case of Aknashen, where Samarra or Hassuna-like pottery are the only ceramics attested in the first occupation levels of that site. A few Hajji Firuz or Samarra-like potsherds have been found randomly at Kültepe I or at Haci Elamxanli amidst local ware, but the important point here is that Mesopotamian or Iranian pottery becomes rare or even totally absent in the later Neolithic levels of these settlements. If a few South Caucasian Neolithic sites did entertain some relationships with the Near or Middle East at the time of their foundation, these links petered out in the course of the 6th millennium BCE[34].

Beside the Near Eastern component attested in the ceramic assemblages of certain early Caucasian settlements, more especially at Aknashen, the external influences perceptible in the Caucasian Neolithic *faciès* are not many. The relief decoration typical of the Kura Basin, best exemplified at Arukhlo, and to a lesser extent in the Araxes Valley[35], is also found in Eastern Anatolia at Tülintepe, for instance, which is roughly dated to the same time period (6th millennium BCE). However, from their climatic and environmental specificities, Eastern and Northeastern Anatolia are close to the Caucasian world anyway, and many times through history these regions have been integrated into the same cultural sphere: the existence of decorative or morphological common points between East Anatolian and Caucasian ceramics should not necessarily be considered as a "foreign trait" imported from Anatolia. Unfortunately, very little is known about Eastern and Northeastern Anatolia during the Neolithic, which prevents further analysis. As for the Eurasian steppes, the Caucasus does not seem to have maintained specific links with the regions located around

31 Marro *et al.* 2019.

32 G. Palumbi/F. Guliyev/L. Astruc/E. Baudoin/R. Berthon/M.B. D'Anna/A. Decaix/B. Gratuze/C. Hamon/M. Poulmarc'h, Excavations and researches at Kiçik Tepe (Azerbaidjan). New data on the Neolithic of the Middle Kura Valley. Paper given at the workshop organised in Istanbul by C. Marro, M. Messager and E. Herrscher, 3 – 4 December 2019, IFEA.

33 Nishiaki *et al.* 2017.

34 The sites in the Mil Plain, such as Kamil Tepe or MPS4, appear as an exception in this general picture since a continuous, if tenuous, link seemingly connects the numerous Neolithic sites of the Mil Plain and those of the Urmiah Basin during the 6th millennium BCE. See Marro submitted.

35 Alakbarov 2018.

the northern and eastern Black Sea before the end of the 5th millennium BCE[36].

All in all, the general picture given by the Caucasian Neolithic sites so far excavated is fairly heterogeneous, which most probably reflects the substratum on which these settlements developed. Judging by the comparison of well-dated sites, belonging either to the earlier (ca. 6200–5800 BCE) or the later (ca. 5800–5000 BCE) phases, the Caucasian Neolithic is characterized by a very low level of cultural, and probably economic, integration, which sharply contrasts with the situation perceptible in contemporary Northern Mesopotamia[37]. A look at the obsidian distribution networks shows that the heterogenous nature of the Caucasian Neolithic parallels a very low interregional integration, since most of the obsidian used in the Near and Middle East during the late 7th and 6th millennia BCE comes from Eastern Anatolia, not from the Caucasus[38]. All these facts concur to suggest that the South Caucasus during the Neolithic was located off the beaten tracks, far away from the major economic hubs. This stands in sharp contrast with the circulation networks that developed in the following millennium during the Chalcolithic period.

The evolution of interregional dynamics between the Caucasus and Mesopotamia during the 5th millennium BCE

Between the beginning and the middle of the 5th millennium BCE, the circulation networks linking the highlands to the lowlands underwent a thorough change. The regions located north of the Middle Araxes Basin became part of a vast territory that included the Caucasus, Western Iran, Eastern Anatolia, the Northern Levant and Upper Mesopotamia: the Caucasus no longer lived in isolation from its closest neighbours.

This evolution is particularly visible in the settlement patterns, with many new sites springing up in the course of the 5th millennium BCE. The settlement density of Nakhchivan, for instance, greatly increased: the number of settlements grew from three sites identified as "Neolithic" (Kültepe I, Uçan Ağıl[39] and Nakhchivan Tepe) to about 35 sites attributed to the Late Chalcolithic. Most of these sites have been dated through the pottery, and sometimes radiocarbon dates, to the second half of the 5th or the first half the 4th millennium BCE. More importantly, most of these sites are concentrated east of the Naxçivançay Valley, especially between the copper beds of Misdağı 1 and 2. This concentration is particularly conspicuous when the settlement pattern of the Chalcolithic period is set against that of the Iron or the Medieval ages (*Figs. 3a–b*). During the survey that we carried out in Central Nakhchivan between 2016 and 2019, a much higher number of Chalcolithic settlements was recorded between the Naxçivançay and the Elinceçay rivers, where copper beds are to be found, than along the Çehriçay Basin, for instance[40].

It is important to note that most of these sites appear to be mobile pastoral camps, many of which are located in the piedmonts of the Lesser Caucasus. From the ceramic assemblages, which yielded some painted potsherds typical of the Pis Deli Culture in the midst of an early Ovçular Tepesi repertoire, it seems plausible that these mobile groups were wintering in the Urmiah Basin in Iran. This is also the case of the group dwelling at Nakhchivan Tepe, who probably came from Northern Iran, as suggested by their typical Dalma Tepe ceramic assemblage[41]: painted or impressed Dalma ware is normally at home in the Northern and Central Zagros[42].

The concentration of Late Chalcolithic sites in Central Nakhchivan is no coincidence: the presence of copper beds is probably an important reason to explain the presence of mobile

36 Kotova 2003.
37 Marro submitted.
38 Barge *et al.* 2018, Figs. 6–7.
39 The site of Uçan Ağıl has also yielded Neolithic occupation levels.
40 This survey was part of the PAST-OBS project (2016–2018) set up by F.-X. Le Bourdonnec and C. Marro, which was financed by the Université Bordeaux-Montaigne in France and Southern Cross University in Australia. This survey is still in progress and is now supported by the French Ministry of Foreign Affairs.
41 Baxşəliyev *et al.* 2018.
42 And also northeastern Mesopotamia as concerns the impressed Dalma ware.

groups in this region from the Late Chalcolithic onwards. This interpretation is further supported by the metallurgical remains that we collected during the excavations at Zirinçlik in 2014, where copper ore was found together with two fragmentary ceramic moulds[43]. This discovery supplemented the evidence that we had retrieved from Ovçular Tepesi, which showed that local Chalcolithic groups had mastered the art of extractive metallurgy by the second half of the 5th millennium BCE[44]. It is clear that metallurgy became ubiquitous in Nakhchivan some time during the Late Chalcolithic, as shown by the data from the camp site of Zirinçlik, but also those of Sorsu and Uçan Ağıl[45]. Outside Nakhchivan, significant traces of Late Chalcolithic metallurgy were also found at Mentesh Tepe (Period III) in the Kura Valley, as well as at Alxhan Tepe in the Mugan steppe[46].

It is thus most probable that the change in interregional dynamics developing in Southwestern Asia during the 5th millennium BCE stems from the rise of extractive metallurgy and the search for metal ores. But how was this system established and how did it work? A few hints may be obtained through the analysis of the metallurgical artefacts, the pottery and the obsidian networks.

The South Caucasus during the Late Chalcolithic: a bridge between the sown and the steppes?

In a few hundred years, between the Neolithic and the Late Chalcolithic, the South Caucasus apparently changed from a secluded, sparsely populated area into a kind of economic hotspot. If the mechanisms at work behind this evolution were indeed clearly linked to the rise of metallurgy, how did this new system come into existence?

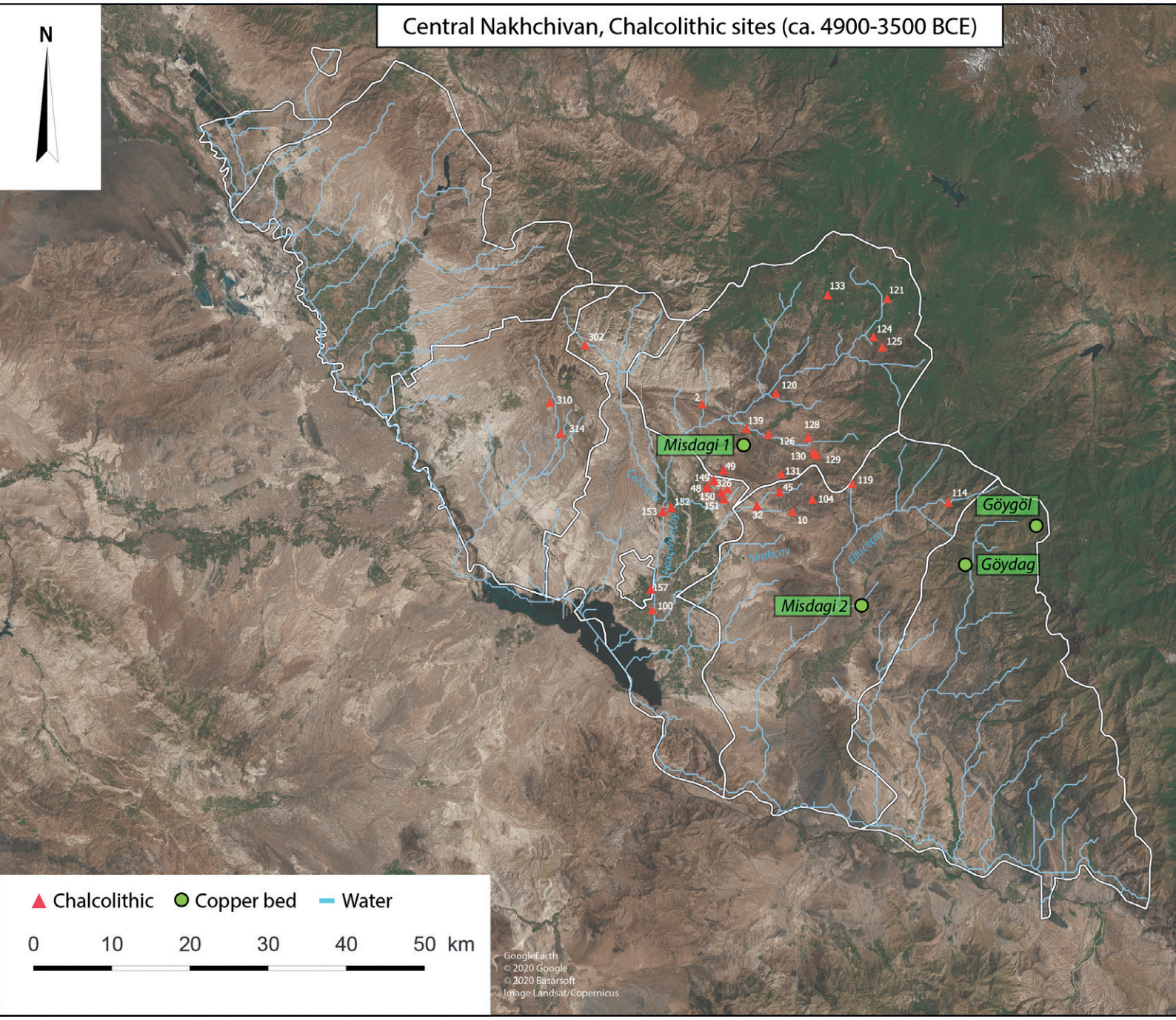
The Pontic component in Nakhchivani cultural assemblages

From its inclusion in the Chaff-Faced-Ware oecumene, it appears that the Caucasus during the Late Chalcolithic was an integral part of interregional dynamics, whose centre of gravity was located somewhere between the Greater Caucasus range, the Oriental Taurus and the Zagros Mountains. This is clear particularly in the pottery, the architecture and the funerary practices attested at many sites. Since the copper artefacts found at Ovçular Tepesi were proven to be made of local copper ore, the conclusion that leaps to mind is that Nakhchivan started to attract the attention of Near or Middle East communities, because it had become associated with a major innovation of that time: extractive metallurgy.

The presence at Ovçular Tepesi of some Post-Ubaid pottery[47], presumably from Mesopotamia, and the regular finds of painted Dalma or Pis Deli ware from Iran in the Sirab Mountains, seem to support this hypothesis. It must be noted, however, that the most sophisticated copper tools from Ovçular Tepesi, a pick-axe and an axe-adze, are connected to the Vinça metallurgical complex, which was at home in the Balkans in Southeastern Europe. This supports one of Evgeniĭ N. Chernykh's early views positing that extractive metallurgy was not a development indigenous to the Caucasus, but had arrived from Southeastern Europe via the Black Sea[48]. This is why, in an earlier article, we ventured to suggest that the sophisticated copper tools from Ovçular Tepesi may have been produced by itinerant coppersmiths, who originated from the Pontic area, whereas simple artefacts may have been produced by local smiths[49].

This tentative hypothesis is not yet sustained by solid evidence, but it should be stressed that the links between Nakhchivan and the Pontic

43 Gailhard *et al.* in press.
44 Gailhard *et al.* 2017.
45 C. Marro/V. Bakhshaliyev/N. Gailhard/S. Sarialtun, Relationships between Nakhchivan and the region of Urmiah during the Chalcolithic period as seen from the Sirab area (4900–3500 BC). Paper given at the international conference "The Araxes River in Late Prehistory; Bridge or Border?" Organised in Lyon by C. Marro and A. Abedi, 14th–15th May, 2019.
46 Courcier/Lyonnet/Guliyev 2012; Akhundov 2014.
47 Gülçur/Marro 2012, Pl. 8,2.8.
48 Chernykh 1992, 55 ff.
49 Gailhard *et al.* 2017, 18.



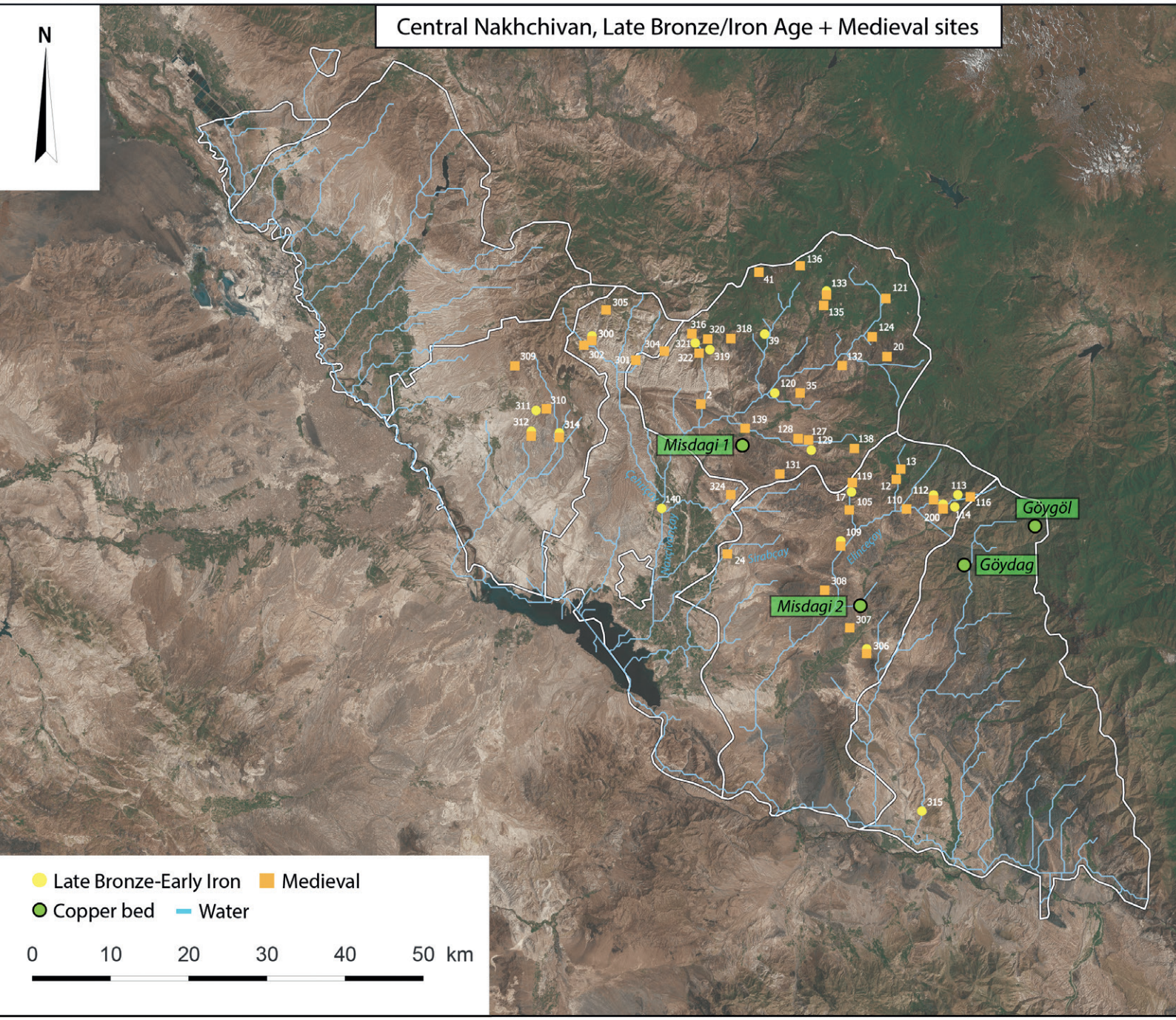
Surveyed sites

2 Selesuz
10 Bulov qayasi 2
32 Mesmeliagil
45 Xornu Chalco
48 Serin Bulaq
49 Galame Bulaq
100 Tumbule Tepe
104 Testamas
114 Demirli Düzlük
119 Velever
120 Şamlar
121 Karvansaray
124 Zernetün
125 Zernetün Deresı
126 Dere Sahbuz
128 Şor Dere
129 Hakkıxlık Necropolis
130 Hakkıxlık
131 Şanişölen
133 BaşYurd
139 Şahbuzkent
302 Qoşadere
310 Hüseyin Kehrizi
314 Pirtepe
326 Plov Tepe altı

Excavated sites

149 Zirinçlik
150 Sorsu
151 Uçan Agil
152 Yeniyol
153 Uzunoba
157 Nakhchivan Tepe 1

Fig. 3a Distribution of Late Chalcolithic sites in Central Nakhchivan.



Surveyed sites

2 Selesuz
12 Kuful Arafsa
13 Su Qavsagi
17 Kent yeri 2
20 Xesheler
24 Necefali dize
35 Mezre
39 Saridere
41 Qaladibi
105 Zoğala 1
109 Qazançi Kale
110 Zirinçlik 2
112 Kola Sü
113 Demirli Patika
114 Demirli Düzlük
116 Demirli Oba
119 Velever
120 Şamlar
121 Karvansaray
124 Zernetün
127 Külüs
128 Şor Dere
129 Hakkıxlık Necropolis
131 Şanişölen
132 Qıxıltapilan
133 Baş Yurd
135 Pultaplan
136 Qanlı Göl
138 Qaratoprak
139 Şahbuzkent
140 Kültepe 2
200 Kola Su
300 Lizbirt
301 Canıxu
302 Qoşadere
304 Tekneli
305 Quyuluk
306 Galgala
307 Köhne Xoş Keşin
308 Qırxlarkala
309 2. Bezekli Kale
310 Hüseyin Kehrizi
311 Xincab Tepe
312 Batan Kend
314 Pirtepe
315 Sumbatan (Dize)
316 Kend Yeri
318 Alçalık
319 Ağdaban 1
320 Ağdaban 2
321 Ağdaban Kale
322 Ağdaban Tarla
324 Babalı Bulaq

Fig. 3b Distribution of Late Bronze/Iron Age and Medieval sites in Central Nakhchivan.

Fig. 4 A Late Chalcolithic jarlet from Ovçular Tepesi, Locus 6330.

area are not limited to metalwork, as shown by the regular presence of so-called "Sioni" ware throughout the Late Chalcolithic sequence in Ovçular Tepesi. Indeed, many potsherds and two almost complete pots (*Figs. 4; 5a–b*), first deemed to be part of the Sioni culture[50], display a number of technical, morphological and decorative specificities that are actually very close to the ceramic repertoire of the Sredny Stog Culture in the Ukraine and Southern Russia[51]. This is the case, for example, in the use of the comb for decorative purposes, or the extensive use of incisions or impressions to create decorative patterns. This stands in contrast with Caucasian pottery, whose hallmark since the beginning of the Neolithic is decoration *in relief* (conceptually the exact opposite of incised or impressed decoration). The Sredny Stog overtones perceptible in the assemblage of Ovçular Tepesi suggest that the Ovçular community had regular links with the Pontic world, while at the same time it was part of the Chaff-Faced-Ware oecumene.

It is therefore clear that the relationships between the Black Sea region and the Ovçular Tepesi Culture should not be underestimated. Yet, here we are faced with direct contacts or is the presence of Pontic-like pottery at Ovçular the end-of-the-lane result of circulation networks with roots located farther north? Unfortunately, the presence of locally made copper-axes displaying marked Balkanic characteristics might be interpreted either way.

The main question here is of course to decide whether the South Caucasus really acted as a bridge between Eurasia and Mesopotamia, or whether its geo-strategic role was in fact more complex. This question will be addressed when we examine the structure of obsidian circulation networks.

The obsidian networks: a proxy for the Late Chalcolithic exchange and communication systems?

The obsidian circulation networks of the Araxes Basin have been the focus of two major research programmes conducted in Nakhchivan in the last few years, the PAST-OBS and the SCOPE projects[52]. Through these projects the provenance of the obsidian collected from the sites excavated or surveyed in Central Nakhchivan, as well as from Ovçular Tepesi, has been systematically identified[53].

About one hundred sites have been listed during the survey that was initiated in 2016. Until now the obsidian collected on 73 sites has been analysed; four of these sites have been or are still being excavated: Nakhchivan Tepe, Sor-

50 Marro/Bakhshaliyev/Ashurov 2009, 49. The so-called »Sioni« Culture is in fact ill-defined, it now seems better to avoid this term. On this question, see Sagona 2018, 136, 207.

51 Compare for instance the two jarlets with pointed bases found at Ovçular Tepesi with the jarlets from Razdorskoe (e.g. Kotova 2008, Fig. 36,1–3) or Chernikovo Ozero (Kotova 2008, Figs. 43,1; 44,2). The rims of the jarlets belonging to the Sredny Stog Culture are sometimes decorated with comb impressions (Kotova 2008, Fig. 27,1–2) or impressed circles (Kotova 2008, Fig. 26,2); all of which are also attested on the so-called Sioni ware of Ovçular Tepesi.

52 Project SCOPE (dir. M. Orange) stems from the PAST-OBS project. See footnote 40; it has been financed by the University of New England in Australia.

53 Orange *et al.* in press.

Fig. 5a–b A Late Chalcolithic jarlet from Ovçular Tepesi, Locus 8072.

su, Uçan Ağıl and Zirinçlik. The obsidian from the Late Chalcolithic levels of Ovçular Tepesi has also been added to this study for comparison purposes. Only the obsidian artefacts collected in the Chalcolithic levels of each site have been included in this analysis. As for the surveyed sites, only those exclusively yielding potsherds dated to the Chalcolithic period have been considered: this is the case of Bülov Qayası, Galame Bulak, Mesmeli Ağıl and Serin Bulak[54].

The results obtained so far have revealed one trend that appears to be of some interest for the issue at stake. There appears to be a marked difference between the sites located in the Araxes Plain, such as Ovçular Tepesi, Nakhchivan Tepe and Sorsu, and the sites located in the Sirab foothills, such as Bülov Qayası, Galame Bulak, Mesmeli Ağıl, Serin Bulak, Uçan Ağıl and Zirinçlik. The sites located in the Sirab foothills usually made use of only two or three sources for obsidian (except for Serin Bulak and Zirinçlik), but in all cases they clearly favoured the obsidian from Syunik (*Fig. 6*). This preference is not surprising, since the obsidian beds of Syunik are located only about 60 km to the north of the Sirab region (as the crow flies), in the Zengezor mountain range (*Fig. 1*). On the other hand, the sites located in the plain, whether at Ovçular Tepesi in western Nakhchivan or at Nakhchivan Tepe and Sorsu in central Nakhchivan, made use of a great many obsidian sources, but show no specific preference for the obsidian from Syunik. This is especially noteworthy for Nakhchivan Tepe, since this site is located close to the Sirab area, yet not in the foothills. Obviously, the obsidian networks of the valley sites and those of the Sirab foothills are not the same and do not have the same ambit. As suggested by the predominant Syunik component in most obsidian assemblages, it is likely that the mobile groups of the foothills were bringing down obsidian from Syunik to communities living in the Araxes Valley, some of which were also mobile. The latter probably collected obsidian from many other pastoral groups, and this is how obsidian from different Caucasian and Anatolian sources circu-

54 In one case, a radiocarbon date obtained from a piece of charcoal sampled from a hearth visible in a cut section gave a chronological reading that turned out to be fully consistent with the pottery collected from the surface of the site. This is the case of Serin Bulak, dated by 14C analysis to the very beginning of the 4th millennium BCE. See Kuliyeva/Bahseliyev 2018, 35.

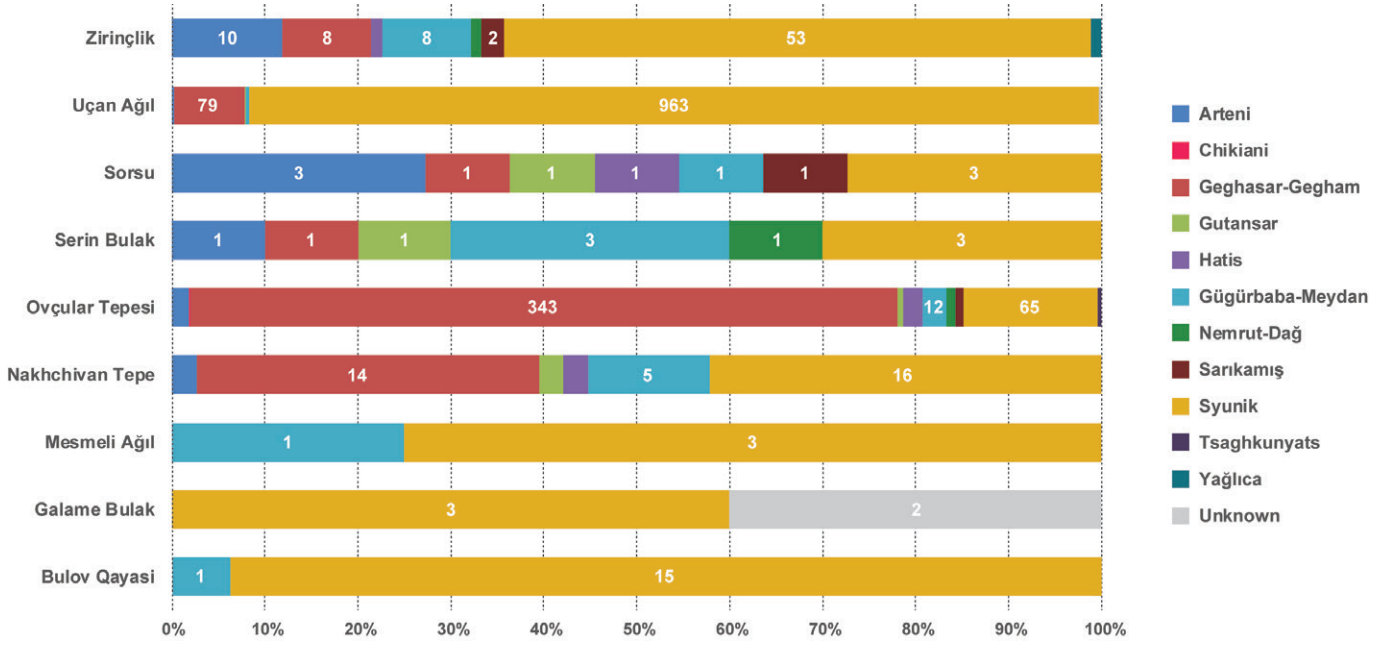


Fig. 6 Obsidian consumption at the sites of Bülov Qayası 2, Galame Bulak, Mesmeli Ağıl, Nakhchivan Tepe, Ovçular Tepesi, Serin Bulak, Sorsu, Uçan Ağıl and Zirinclik. Bar charts (100 % stacked columns). The numbers indicated in white are the number of artefacts attributed to the specific sources for each site.

lated along the Araxes Valley from East to West (and West to East).

This model suggests that obsidian circulation networks were organised along a distributive chain, in which the mountain-site networks stand at the beginning of larger, regional (trans-regional?) circulation networks, and which may never have had any contact with the end-line. According to this scenario, the larger circulation axes of the Caucasus, such as the Araxes Valley, would have acted as an economic hub in a web of interconnected circulation units.

Judging by the pottery found at certain sites, e.g. the Dalma ware assemblage from Nakhchivan Tepe, mobile pastoral groups coming from Iran were also part of this distributive system. From their obsidian assemblages it seems that the herders from Nakhchivan Tepe were in contact with mobile groups from Eastern Anatolia, unless they went to Eastern Anatolia themselves to collect obsidian from Gügürbaba-Meydan in the Lake Van Basin. The pastoral groups from the Sirab foothills, on the other hand, probably restricted their seasonal moves to a region between the uplands of the Lesser Caucasus and the Araxes Valley, as suggested by their local ceramic assemblages, in which only a handful of painted Iranian potsherds are attested. However, it should be noted that a small amount of obsidian from Gügürbaba-Meydan is also attested on most of the Sirab sites. It would be hazardous to draw definite conclusions from this remarkable fact already. Nonetheless, the obsidian from this faraway Anatolian source seems more ubiquitous in Nakhchivan than obsidian from closer Caucasian beds, such as Hatis or Gutansar. This is even true for the camp-sites located in the foothills.

If the principles underlying the obsidian distribution system throughout the Caucasus, Eastern Anatolia, Iran and the Near East during the Chalcolithic are still unknown, it is clear that this system heavily relied on mobile groups. As a tentative hypothesis, we suggest that a similar system may have presided over the circulation of metal ores between the Caucasus, Iran and Mesopotamia, on the one hand, and the Caucasus and the Eurasian steppes, on the other. We may even surmise that this was how metallurgical knowledge reached the Caucasus, and later on the Near East. But of course, all of these hypotheses remain to be substantiated.

Conclusion – The South Caucasus during the Late Chalcolithic: a bridge between the sown and the steppes?

The available archaeological evidence from the Caucasus suggests that the relationships between the Caucasus and its neighbours during the Late Chalcolithic were multifold. If the Caucasus was clearly part of an interregional interaction sphere that included northern Syria and Mesopotamia during the late 5th – early 4th millennium BCE, it also maintained some links in the field of extractive metallurgy with the Black Sea region, a major field in prestige terms that probably was at the centre of exchange dynamics from the late 5th millennium BCE onwards.

If most Late Chalcolithic circulation networks remain to be identified, it is quite probable that mobile pastoral groups from different horizons played a major part in the formation of these distributive systems. As concerns the Araxes Valley, for instance, mobile pastoralists from Iran clearly took part in these circulation networks, as shown by the evidence from Nakhchivan Tepe. They were supplemented by "local" mobile groups, who brought the obsidian from Syunik down to the Araxes Valley.

Whatever the exact shape of these circulation networks, it is clear that the multi-directional relationships perceptible in the material assemblages of valley and mountain sites alike mark a new era in the history of the Caucasus, after its relative isolation during the Neolithic period.

Unlike the Neolithic, the Chalcolithic period in the Caucasus was thus an era of steady communication and exchange with the region's northern and southern neighbours. From this point of view, the Caucasus may appear as some kind of nexus at the junction between the incipient urban, agrarian states of 4th millennium Mesopotamia and the pastoral-based, hierarchical communities of the Caucasus, Anatolia and the Eurasian steppes. This, however, does not mean that the communities living on both sides of the Caucasus mountain ranges were in direct contact. From the available evidence, it seems, on the contrary, that the circulation of goods and people in Late Chalcolithic Caucasia was shaped as a distributive chain, as a series of circulation networks of probably different extents and different purposes, where the smaller networks at the beginning of the system did not have any direct relationships with those at the end-line.

Better than a bridge, the Caucasus during the Late Chalcolithic was more like a hub, a focus where different communities met and interacted. As a bridge, the Caucasus would have been a simple through-way; as a hub, it became the cradle for new dynamics, the place where cultural practices merged and evolved into new trends. This was certainly the case of Nakhchivan during the late 5th – early 4th millennium BCE.

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