

Obsidian in the productive activity of early farming communities of the Southern Caucasus

Archaeological research and statistical processing of the stone industry of Neolithic and Eneolithic farmers of the Southern Caucasus have shown that the overwhelming majority of artefacts were made from obsidian. The blades of sickles, scrapers and knives as well as the shafts of chisels and drills are

various artefacts that constitute the farming and cattle-breeding complex of the Caucasus region. Most of the early farming settlements were located on the plains close to the mountainous areas of the Minor Caucasus, which were rich in volcanic sources and obsidian. The main deposit of volcanic glass

No.	Monuments of obtained samples	Petrographical peculiarities Variety	Refraction indicators
1	Shomutepe (western Azerbaijan)	black, shiny	1,484
2	Shomutepe (western Azerbaijan)	black, shiny	1,484
3	Shomutepe (western Azerbaijan)	black, dull	1,485
4	Toyretepe (western Azerbaijan)	black, shiny	1,484
5	Toyretepe (western Azerbaijan)	grey with black stains	1,485
6	Gargalartepesi (western Azerbaijan)	grey with black stains	1,485
7	Gargalartepesi (western Azerbaijan)	black, shiny	1,484
8	Rustepesi (western Azerbaijan)	black, dull	1,486
9	Baba-Dervish (western Azerbaijan)	black, shiny	1,484
10	Baba-Dervish (western Azerbaijan)	grey with black stains	1,485
11	Baba-Dervish (western Azerbaijan)	grey with black stains	1,485
12	Baba-Dervish (western Azerbaijan)	black, dull	1,486
13	Alikemektepesi (plain of Mugan)	black, shiny	1,484
14	Alikemektepesi (plain of Mugan)	black, shiny	1,484
15	Alikemektepesi (plain of Mugan)	black, shiny	1,484
16	Alikemektepesi (plain of Mugan)	black, dull	1,485
17	Ilanlitepe (Karabakh)	black, shiny	1,484
18	Ilanlitepe (Karabakh)	black, dull	1,485
19	Kultepe (Nakhchivan)	black, shiny	1,485

Tab. 1. Results of petrographic analysis of obsidian samples from Eneolithic monuments in Azerbaijan.

No.	Monuments of obtained samples	Petrographical peculiarities Variety	Refraction indicators
1	Kechaldag (Azerbaijan)	black, shiny	1,484
2	Kechaldag (Azerbaijan)	black, dull	1,485
3	Kechaldag (Azerbaijan)	black, dull	1,485
4	District of Lake Paravani (Georgia)	black, shiny	1,484
5	District of Lake Paravani (Georgia)	grey with black stains	1,485
6	District of Lake Paravani (Georgia)	black, dull	1,486
7	Bazenk (Armenia)	black, shiny	1,485
8	Gutansar	black, dull	1,486
9	Gutansar	grey with black lines	1,487
10	Gekhasar	black, dull	1,486
11	Atis	grey with black stains	1,486
12	Arteni	grey with black stains	1,487

Tab. 2. Results of petrographic analysis of obsidian samples from deposits in southern Caucasus.

in Azerbaijan is in Kalbajar and at the frontiers of Nakhchivan with Armenia. Obsidian deposits are likewise known in Georgia and Armenia. Two deposits in Georgia are present in Akhaltsikh and in Paravani.

Based upon the definition of refraction indicators, petrographical analysis was carried out in order to determine the place from where early farmers in Azerbaijan obtained obsidian. In all 19 samples from archaeological excavations and 12 samples from different deposits in the Minor Cau have been examined so far.

Comparison of the results has revealed the following:

For the western territories of Azerbaijan that border with Georgia the indicators are: low coefficient of refraction 1,484 characteristic for the settlements Shomutepe, Toyretepe, Rustepesi and Babadervish, and 1,485 characteristic for the settlements Shomutepe, Gargalartepesi, Rustepesi and Babadervish. The results were the same for the obsidian samples from Paravani. Thus, Georgian obsidian was the main source of raw material for these plains settlements in Azerbaijan. This conclusion is quite convincing, because the distance between the aforementioned settlements and Paravani is 145 km.

In addition, remarkable results were achieved for the settlements in the Mil and Karabakh plains (Ilantepe, Alikemektepesi), where obsidian with light refraction 1,484 and 1,485 was used. The same results were characteristic for Kalbajar deposits as well. This means that the inhabitants of both settlements preferred the local raw material. The distance from the Kalbajar deposit to Ilanlitepe is 96 km, from Alikemektepesi to Kalbajar – 230 km. No doubt, the distance from Alikemektepesi to the Kalbajar deposit explains the predominance of flint objects over obsidian.

The indicator achieved from the obsidian sample from the settlement Kultepe I in Nakhchivan is 1,485. Obsidian from the volcano Bazenk (Syunik sub-zone), located 78 km from the settlement, has the same coefficient. The inhabitants of Kultepe I delivered raw material to the settlement from this place.

Conclusion

The western settlements in Azerbaijan are located at a distance that is not greater than 300 km from the main source of obsidian. According to C. Renfrew's scale, the main source is designated the "supply zone". Obsidian artefacts found in this area formed approximately 80% of the stone industry. The supply of settlements with raw material can most likely be explained by constant contact and exchange relations between neighbouring farming communities during the 6th–4th centuries B.C.

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Summary

During archaeological researches of the cultures of the early farmers of the Caucasus of the 6–4 millenniums B.C. was proved the fact that the majority of tools were made from obsidian extracted from the Caucasus Minor. Petrography analyses of obsidian from the monuments and the places of extraction of Azerbaijan gives the opportunity to reveal the different sources of usage of obsidian and the ways of its transportation.

Резюме

Изучение орудий труда раннеземледельческих культур Кавказа 6–4 тыс. до н. э. показало, что большинство из них было изготовлено из обсидиана, который добывался на месторождениях Малого Кавказа. Петрографический анализ обсидиана с памятников, расположенных на территории современного Азербайджана, дал возможность не только установить методику изготовления орудий труда из данного сырья, но и выявить маршруты его транспортировки.