

Ancient Azerbaijan's Bronze bracelets - the cash equivalent of the Bronze Age

Soltanova Nazila Baghir

Doctor of philosophy,
Associate Professor of the Institute of physics of ANAS, Azerbaijan

Copyright © 2017 ISSR Journals. This is an open access article distributed under the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: This article deals with issues on the weight and monetary system of the Bronze Age and the Iron Age in Azerbaijan. The basic weight unit of that time called as the "Caucasian shekel" had its parallel functioning in the form of payment equivalents. The Bronze bracelets merged on the basis of that system. They functioned as money and at the same time as the weight standard. The article presents a new version of the system with respect to the weight of that time.

KEYWORDS: sickle, bronze, bracelets, numismatics, the weight and the monetary system.

Creations of past generations allow today to speak about the achievements of modern science. The famous French archaeologist Jacques Jean-Marie de Morgan (1857-1927) writes: "It is necessary to know the secret of reading of the ancient creations in order to understand correctly the meaning and significance of the ancient creations and to judge about the life of their creators [3, p.6].

Archaeological findings of scientists lead us to the extreme antiquity. A great number of products performing the function of money is known before the advent of coined money. The ingots of precious metals (copper, bronze, silver, gold) were the last products meeting the requirements of universal equivalent. Metals are more suitable material regarding their physical properties for playing the role of a universal equivalent with their all characteristic features. Depending on the geographic region, each nation had its own equivalent. Then more universal functionary—coined money appeared.

The transformation of primitive barter into the public process with the criteria of comparing the value of the products in the territory of Azerbaijan started around the centuries XIII -XI BC and accelerated nearly in the VIII - VII centuries BC They had all conditions – geographic, sources of various raw materials, water and land opportunities, the population density for this purpose. [1, p.172]

In 1890 the French archaeologist Jacques de Morgan conducted archaeological excavations in the south - eastern region of Azerbaijan and discovered ancient burial places with rich decoration. There were enough bronze bracelets among the findings. Morgan noted that "the ingots in the form of bracelets presented a special kind of banknote of certain weight in the era of railway industry." [3, p. 275]

The archaeological findings in the excavations on the territory of Azerbaijan allow to speak about the cash equivalent of the Bronze and Iron Ages - bronze bracelets functioning on this territory. More than 70 similar bracelets were found on the skeleton found in the burials in Mingchevir.

The main unit weight of bronze bracelets per Morgan was 8.2 grams which was called "Caucasian shekel." [1, p. 152]

The Assyrian - Babylonian shekel (the shekel) is equal to 10-11 grams. Shekel (shekel) is a Hebrew word (II thousand. BC. E.), which translation means to weigh. Jewish shekel is about 9-17 grams. Shekel in the average weight equal to 8 grams, was a quite popular financial equivalent of the international trade of the XIX century. BC. [5, p. 22], [7, page 12]

Bracelets in question were made by certain weight standard. After the analysis of the bracelets from the archaeological fund MIA the well-known numismatist Ali Rajabli considers that the initial weight norm for these bracelets is 10 gr. He identified four groups disposed in the quarterly order - 1, 2, 4, 8 - with an average weight, respectively: 10, 20, 40, 80 c. [7.

12]. Indeed, an amazing weight system is obtained in which bronze bracelets acting as means of payment and weight units merged in the antiquity.

At the beginning, the metal presented itself extremely valuable material, it was protected with great care. The last periods of polishing stone of various nations are concern to the nascent metallurgy. Use of copper is followed by obtaining bronze.

Bronze is an alloy of copper and tin. The ancient world was rich in copper and tin was not so much. The alloy has more hardness than the red copper-soft, lightweight metal. However, copper can receive the hardness not only through alloy with tin. Increase of small doses of arsenic, antimony or zinc also changes the molecular composition of copper.

Already in ancient times the people tried to produce alloys. An alloy giving necessary qualities to copper for weapons, tools should contain tin in the ratio of 10 to 100. The change of the given ration gives the brittle alloy. Because primitive metallurgists of these times did not possess modern scientific methods and could act only groping, the consecutive samples with tin content in the bronze tools and things are very different. While calculating the density of the bronze bracelets studied by us we were faced with these inaccuracies. Nevertheless, the desired tin content in the alloy for the ancient times ranged from 10 to 18%.

Even the first metallurgists found deposits of copper and tin in the virgin form; they seem to be in the form of oxidized ores and it was enough to melt them on the restorative charcoal fire in order to extract the metal. Tin was extracted by washing the sand. [2, p. 10]

The question arises whether the bronze was prepared by combining certain proportion of its two constituent elements in metal form, or ores were mixed before smelting? The latter assumption is more suited to the real facts, which can be explained by the difference of tin content in the alloy.

Thanks to intensive improvement of bronze technology and specialization of ancient Azerbaijan tribal and communities in ore mining and metal working, the development of productive forces was accelerated, foreign relations and trade barter borders were significantly expanded. Trading began which required universal equivalent.

There was their own copper in the Caucasus which was also exported and tin was mainly imported.

Bronze bracelets, rings of different sizes and weights encountered in burials at the end of the II- at the beginning of the I millennium BC can be considered the first metal money in Azerbaijan.

Besides these bracelets in question, no other items made referring to some weight standard or weight system are known yet. Therefore, we can't classify a given weight rate to any weight system. But the weight norm of the bronze bracelets is 8-11 oz., it is nearly identical to the youngest unit of the Assyrian - Babylonian weighing system - shekels (shekel), which was applied in the territory of Azerbaijan without the influence of the developing commodity - money relations and trade ties with the highly developed civilizations of the Near East

Numerous findings of gold and silver articles belonging to the late Bronze Age and the beginning of Iron Age (XII - IX centuries BC) found during archaeological excavations in the territory of Azerbaijan allow to state that gold and silver were well known in ancient Azerbaijan as noble metals. It shall be noted that the share of shekel was considered mainly for payments in precious metals, gold and silver which were international means of payment of that time. [6, p. 46]

Our weighing of bronze bracelets kept in the State Museum of History of Nakhchivan and found during excavations Kizilburun, Garabaghar and Julfa (Nakhchivan AR) and bracelets found in Tovuz showed nearly above the marked unit – 8 -10 grams.

Such question arises: why weight unit is exactly 8 - 10 grams?

Exploring these bronze bracelets we had an interesting version concerning the weighing system (weighing units) by which similar bracelets were made (merged). The main unit weight of bronze bracelets, 8.2 g is the "Caucasian shekel," known as a weight unit of its time, it coincides with the density of bronze in digital form. The density of tin bronze is $\rho = 8,6 - 9,3 \text{ g / cm}^3$ (90% Cu, 10% Sn) and of phosphor bronze is $\rho = 8,7 - 8,9 \text{ g / cm}^3$ (92.5% Cu, 7% Sn, 0.5% P). In all likelihood, the metallurgists of that time possessed the information on the density of bronze in some primitive form and the principal weight unit of the trading system of that time - shekel was determined on the basis of this value.

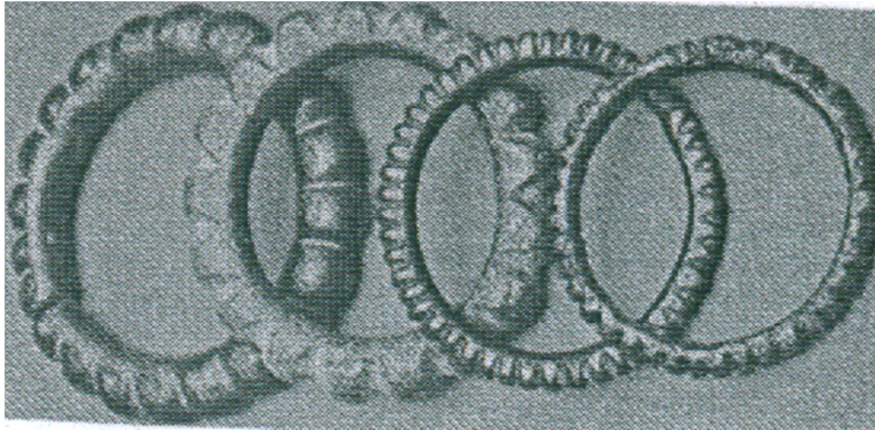


Fig 1. Bronze bracelets belonging to the beginning of the Iron Age. They were found in the archaeological excavations in Garabaghlar (Nakhchivan AR).



Fig. 2. Bronze bracelets found in Tovuz [4, p. 9]

	Nakhchivan				Tovuz				
M (g)	360	270	90	80	39	61	19	66	56
M (g)	10							8	

	Nakhchivan				Tovuz				
m (g)	360	270	90	80	66	61	56	39	19
ρ (g/m ³)	6	7.7	10	10	8.2	8.7	8	5.5	4
m (schekel)	45	33	11	10	8	7.5	7	4.7	2.3

REFERENCES

- [1] Бабаев И.А. Города Кавказской Албании в IV в. до н. э. – III в. н.э. Baku, Elm, 1990. p. 236.
- [2] Древний Восток и античная цивилизация. St. Petersburg, State Hermitage, 1988, p. 136.
- [3] Жак де Морган. Доисторическое человечество. Moscow- Saint Petersburg, State publishing house, 1926, p. 315.
- [4] Qasar Ç.O. Mizandarlıq. Baku, East-West, 2010, p. 136.
- [5] Марков А.К. Древняя нумизматика. Part I. St. Petersburg, A.P.Lopukhin's publishing house, 1901, p. 222.
- [6] Пахомов Е.А. Клады Азербайджана и других республик и краев Кавказа. Baku, AzFAN publishing house, 1938, p. 101.
- [7] Раджабли А. Нумизматика Азербайджана. Baku, Elm ve hayat, 1997, p. 232.