

Does *Iron* in Armenian really means *a Sky Drop* ?

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Abstract. In the languages of the ancient Hittites and Egyptians, and later the Greeks, iron was called *celestial metal* or by the close in meaning word. A browse review of iron names in several languages shows that with the exception of the mentioned three languages, in other languages the name of the iron reflects its function (hard, cutting, superpower, iron-stone, etc.) but not origin. According to the Hittite sources, iron was produced by the masters of the *Hatti* kingdom controlled by Hittites, located, by the way, next to the kingdom of *Hayasa*. *Hatti* adjoins the region on the southeastern coast of the Black Sea, where, according to Aristotle, the *Halibs* lived - craftsmen who produced *the best iron*. It is known that the mountain rivers of this area brought sand and accumulated in the mouths sand with a high content of magnetite, an iron-containing mineral with a lower melting point (compared to other rocks). It is this circumstance, according to geologists, that the beginning of the *iron* century takes place in this area in the XV-XIII centuries BC. On the basis of all of the above, the literal translation of the Armenian name of iron *erkat* = *dropped from the sky* does not seem to be meaningless. But academic philologists categorically disagree with this. In this report, a more convincing (from the astrophysicist point of view) etymology of the Armenian word *erkat* = *er-ka* = *heavenly metal* is proposed.

1. Introduction

There is an intricate and unsolved problem of the meaning of the Armenian word *erkat* which literally is *iron*, but also means *a Sky Drop*. This is of course the task for philologists and historians but at least astrophysicists may have some contribution into the statement of the problem, may ask and hope to get from professionals clear answers for the simple questions listed in this work. All data below are from academic and easily verifiable sources.

As is known, etymology of Armenian twin words "yerkinq" and "yerkir" ("sky" and "earth", correspondingly) is very uncertain (e.g. Acharian (1935) especially if one would like to connect them with "iron-yerkat" by means of the debatable common root "yer" and decode the word as a "sky drop = yer-kat". Modern philologists (e.g. Martirosyan (2011)) refuse any such a relation and announce as a coincidence the spelling of the modern Armenian word resulted with the mentioned meaning. Historians probably also will decline that explanation because according to the usually accepted point of view when the Iron Age has started in the Hittites Kingdom or to be more correct, in the northern part of the Empire (the Hatti Kingdom) around XV-XIII B.C. (e.g. by Bryce (2007)) there were no carriers of (pre)Armenian: (pre)Armenians have leaved

their Balkan ancestral land and have entered into the mentioned area now known as the Armenian Highland no earlier than at XII B.C. as was shown by Dyakonov (1968).

But let us discuss all the known facts carefully. First of all it should be highlighted here that in some very old languages the ancient name for iron was "Metal of Heaven": a well-known example is coming from the hieroglyphic language of the ancient Egyptians where it was pronounced as "ba-en-pet" (in other sources, "ba-ne-pe"), meaning either stone or metal ("ba") of Heaven "ne-pe" as referred e.g. by Bayun (2011) and Giorgadze (1988). A basic idea, expressed in ancient religious texts, was that the firmament of Heaven was of iron. This belief probably arose from the occasional fall of meteoric iron from the sky. It is interesting to note that the "iron from heaven" hieroglyphs which look like as presented below (Fig.1 left, Bayun (2011)), they also were displayed on the Meteoritical Society Journal cover from 1969 to 1987 (Fig. 1, right).

2. Iron in Armenian, the location of carriers of that term and all that

It should be stressed that iron in Egypt as in some other countries was obtained from meteorites long before the Iron Age set in (about XXV-XX B.C.), but such iron things (e.g. knives) were very rare. Now we distinguish between meteoritic and ore iron by at first their Nickel abundance which in the former is larger by a magnitude and more (Ni is about 5-10 % in meteoritic iron providing a good quality of resulting iron while only about 0.5 % in ore iron) and at second, as is mentioned, by their quality: meteoritic iron things are of course, better thanks to the known minor contributions like Ni etc. Knives from meteoritic iron were known ca XXX BC. Earlier as some kind of a stone awl and later on the base of an meteoritic iron awl. They were used in Egypt, ca XXV BC for ritual sacrifice. What is interesting in some texts such awls were named as "biz" as was described by Wainwright (1938) (see also GizaPyramid (2017)) while "biz" in (modern) Armenian also means an (iron) awl (unfortunately with unknown etymology).

Concerning the origin of first iron things a question is raised how much meteoritic iron was dropped on the area of Near East during ancient times? According to careful assessments of Ivanov (1983) up to 1 mln tonn is estimated a mass of iron meteorites accumulated on the area of Ancient Near East. Transition to rocky iron production has taken place in XV-XIV BC thanks to an increased industrial thermal ability described by Ivanov (1983) and shown in Fig2. Later Egyptians lost the ability to get iron things and began to import them from the Hatti Kingdom, controlled by the Hittites Empire. The most important point for us is that people in that country have distinguished between the meteoritic and rocky iron and have been named them differently ("ha-pal-ki", the more later form is "ha-wal-ki"), "heaven iron", "good iron" - probably steel that is iron with important dopants, "black iron" - Bayun (2011).

But who were in fact first iron makers? As is well documented by Ancient Greek sources the first industrial production of iron was done by Halibs, who lived at the South-Eastern Black Sea coast and their dominant occupation was iron melting and fabrication (first mentioned by Aeschylus (VII BC), Herodotus (VII BC), Xenophon (IV BC)). It is generally accepted now that the dating of the process is about XV-XIII B.C. The magnetite sands of the river deposits in that area with a lesser melting point than other iron-containing rocks, about 1300-1400 C as compared with 1530 C. Well known now minor dopants of that iron-contained sand played the important role and provided a good quality of iron. Aristoteles claims that "halib iron is the best one in the world, because Halibs produce it in their own secret way". He calls it "white Halib

iron" (cited by Kosidowsky (1963)). Now it should be stressed that there is a point of view that "halib" means an occupation ("iron maker" according to Harutiunyan (1998)) and it is interesting to note that Pliny the Elder (I AD) (and Strabon (I AD)) marked them as armenohalibs, see below, in Fig3.

In fact, of course, geographically the area of halibs is located on the part of the Armenian Highland at the coast of Black Sea, as shown in Fig 4. One can see that the Hayasa country is located between the Hatti Kingdom and the Halibs area ?, 4. In such a case it is worthy to note that Hittitologists discuss long time about a possible relation of Hayasa country with Armenians because Hayasa name is dated earlier than XV BC. In such a relation it is interesting to note that both "Hayasa" and "Hayk" mean self-name of Armenians in Armenian. On the other hand Dyakonov (1968) insists on the coincidence of two names while Ivanov (1983) rejects Dyakonov's speculations and supports their close connection. What is interesting some modern academic sources e.g. Redgate (2000), Russel (2004) both refer to earlier work of Dyakonov (1968) but not mention much more modern work of Ivanov (1983). In short, according to Dyakonov (1968) such a connection is linguistically impossible while the Armenian point of view about origin of "hay" is supported by Ivanov (1983).

It is out of scope of this note to reveal pro and contra concerning the problem of the Armenian nature of the Hayasa country but one should stress that there is a good geographical coincidence between Hayasa and the territories of (Armeno)Halibs according to comparison of mentioned Fig3 and Fig4 (Pliny the Elder (I AD), Bryce (2007)). It is worthy to note also that it is an area of Hamshen Armenians for whom iron in their dialect is "ergat" (Acharian (1935)). At last but not least technologically more convenient production of iron on the area of historical Armenia (e.g. Metsamor) is dating at XIV-XIII B.C. and what is more important there is close archeological (technological) connections between the Hatti (Hayasa) and Metcamor melting furnaces (Ivanov (1983)). At last but not least a much more early production of iron-containing paints for ornaments demanding on less than 1000 C was revealed in Metcamorian cultural layers and described by Ivanov (1983).

It should be stressed also that authors of many academic publications avoid the mentioned possible link between "Hayasa" and "Hayastan", like Walbaum (1980), Giorgadze (1988), Grigoryev (2000) but just reveal details of industrial production of first iron things. These authors describe that the texts of Hittites clearly distinguish between different kinds of iron: "iron" - (AN.BAR, also in Sumerian), "black iron" - (AN.BAR GE 6), "good clean iron" - (AN.BAR SIG 5), "sky iron" - (AN.BAR nepis-sass) but nowhere mention the similarity with that of in Armenian. On the other hand a modern Russian language internet folklore is saturated with such a findings equating the name of iron in Armenian "yerkat" with the mentioned term of the "sky drop". For example, "...first its (meteoritic iron) names come from Egypt, Mesopotamia and Armenia and mean sky metal..." Encyclopedia of Petrol (2017). Or, "... the iron name in ancient languages - e.g. in Ancient Armenia means "dropped from the sky..." by Gribanov (2011).

I am not going here to present a complete decoding of the questioned Armenian term "erkat" by reasons described above but just try to underline a following - in Greek, iron is known by 3 names: 1) " σιδηροζ ", - "sederal" which probably reflects possible communications between Greeks and first "iron makers" at the Early Iron Age; 2) " χαλκοσ " - which means "metal, copper, steel"; 3) " χαλψ " - "iron, steel", coming from mentioned halibs as was shown by Ivanov (1983). Interestingly, " χαλκοσ "

is connected with more earlier term "ka-ko", coming from Mycenaean and meaning general name of metal in the pre-Iron Age as was mentioned by Ivanov (1983).

Let now browse in the Wiki Dictionares: it is easy to check following meanings: Persian (Farsi) - pulad (polat) - cast steel, Arabic - Fulad, Parzillu - iron stone - Assyrian, Akkadian - PAR.ZILLU, Aramaic - PAR.ZEL, bar-zel - Hebrew - as cutting, Ferrum - in all Romanian languages, also as hard (connected with bars - thicken - Sanskrit), Apkhazian - aikha (iron) - hard, German - Eisen (adopted from Keltic=Celtic - isara) - also old English - superpower, Georgian - rkina (probably adopted from Armenian). At last but again not least, one should mention the name Timur=Temur=Tamerlane=iron - as hard as iron (Timur, Meaning of name (2017)).

One can easily see that "sky drops" meanings were absent in the list above. One can see also that among existing languages (skipping Greek, Egyptian and Hittite) only Armenian name of iron (if directly translating from modern Armenian as "a sky drop") is connected with its nature and source of the origin while other languages stressed the function. Thus one comes to the final question, concerning interpretation of the term "yerkat - iron" in Armenian: is it correct to connect "yer-kat" with "sky iron" or not ? The answer is positive but bear in mind objections of philologists one can suggest a new simple and evident idea: iron in Armenian means "sky metal" but not the "sky drop", that is yer - ka - (t) should be translated as sky metal. Here "yer" is "sky" in Armenian and "ka" is "metal" from oldest Micenian=IndoEuropean.

Thus it looks like that all the names of iron reflects the functions while Greek, Egypt and Hittite names and probably Armenian are connected also with the origin, meaning the "sky metal".

3. Conclusion

A probable connection between "Iron" in Armenian as concerned to its origin is discussed. On the base of data from easily verifiable sources is shown that all the names of "iron" in ancient and more modern languages reflect the "functions" while those in Hittite, Egypt, Greek and probably Armenian relate the origin. So "yer-ka (t)" in Armenian means "the sky metal" !

The author understand how complicated is the problem from the philological and historical points of view, on the other hand if all the mentioned above is impossible and is a mere coincidence then one should hope for unbiased explanation of that from the professionals in the subject. Also it would be not bad to understand first of all why so many coincidences are announced by academic sources concerning the History of Armenia, like, 1. Aratta = Ararat, 2. Hayasa = Hayastan, 3. Er-ka-t = the Sky Metall. One should remind that all of them (and some others) are announced as coincidences. So it would be much appreciated if one may explain such coincidences (at least what is concerned with "yerkat") in the way different from described above. Finally the author anticipates that the best scientific solution of the problems would be just simply to equate the names with their meanings in the list above.

4. Images

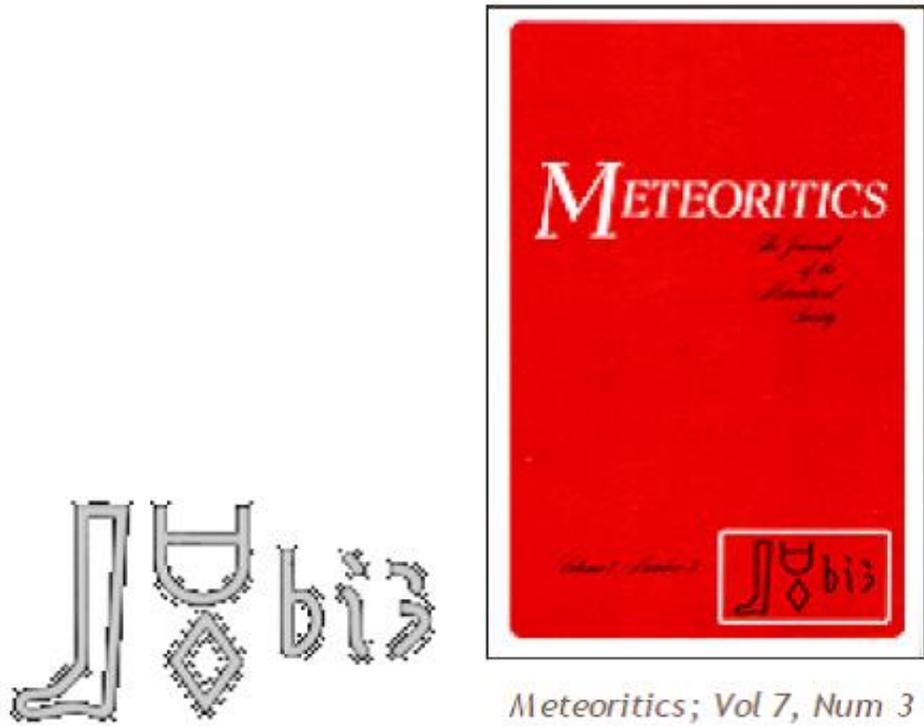


Figure 1. "Iron from heaven" hieroglyphics *Left*: Bayun (2011). *Right*: A known cover of the Journal.

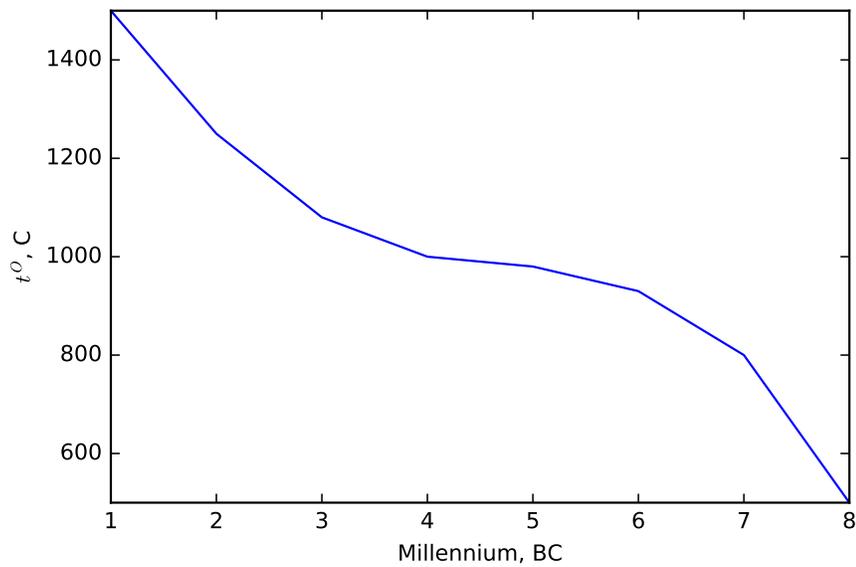


Figure 2. Rise of industrial thermal ability by Ivanov (1983).



Figure 3. Location of Armenohalibs according to Pliny the Elder (I AD) and Strabon (I AD).



Figure 4. The map of the Hatti Kingdom, controlled by the Hittites Empire by Bryce (2007).

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