Latin Metals

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Abstract

Classical Latin had four inherited words *aes* "bronze," *aurum* "gold," *argentum* "silver," *ferrum* "iron" to denote metals known to Latin people. The etymology of those words has been discussed in various literatures and in this short article, the author examines the words as seen in previous studies and finds the *aurum* and *argentum* are members of the Caland system which existed in PIE period. *Ferrum* may be a member of the Caland system but the evidence for the existence of related words in the other PIE languages is not decisive.

1. Introduction

In Classical Latin, we can find words for different kinds of metals. They knew of gold (*aurum*), silver (*argentum*), iron (*ferrum*), lead (*plumbum*), mercury (*hydrargyrus*) and copper (*cyprium*, later *cuprum*). There is another word in Latin (Lat.), *aes*, which denotes crude metal or an alloy, especially bronze.

Clearly *hydrargyrus* and *cyprium* are loan words from Greek (Gr.), ὑδράργυρος and κύπριον, respectively. The Greek word for copper is χαλκός[1], which is attested already in Homer. The Greek word κύπριον is a neuter form of κύπριος "of Cyprus" and the reason why the neuter form was adopted is that at the first stage of borrowing, *aes cyprium* "Cyprian metal" was used to denote copper. This is because Cyprus was known for its copper mine, as Pliny described in his "Naturalis Historia." The *aes* was later dropped[2]. The word *plumbum* "lead" and Gr. masculine (m.) μόλυβδος "lead" are of non-PIE (Proto Indo-European) origin[3].

In this short article, we shall examine four Latin words for metals, *aes*, *argentum*, *aurum* and *ferrum*. There are some problems with their word formation and their relations among other Indo-European languages. We will try to explain these problems.

2. *aes* "crude metal, bronze"

The word *aes*, *aeris* is an s-stem neuter noun and it can be compared with Sanskrit (Skt.) *áyas* "base metal," Old High German (OHG) *ēr* "ore." Its PIE form can be reconstructed as *h_2eios-. The Latin nominative form should be explained because though we expected the reflex of PIE *-os* in its nominative form, the Latin form in fact has *-es*. In proto-Italic, the ending had already become *-es*

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[1] In Pliny, *chalkus* is attested but its meaning was "a copper coin."
[2] The adjective *cyprius* "of copper" is attested as a result of secondary development in Latin.
[3] See Frisk (1973) pp. 247-248 for details.

because in Umbrian we have the adjective (adj.) **ahesnes** "bronze" < *aiesnos and its counterpart in Latin aēnus[4], with long ē as a result of compensatory lengthening. The proto-Italic form *aiesnos can be analyzed into *aies-no-; the former part is a weak form of the s-stem noun *$h_2$éios- and the latter part is an adjectival suffix *-no. This means that already in proto-Italic, the weak form replaced the nominative. See Meillet-Vendryes (1927: 78).

But this replacement is not frequent among Latin neuter s-stems[5]. Latin s-stem neuter nouns usually have -us < *-os in the nominative-accusative singular and -eris < *-es-es in the genitive singular, for example, genus, generis "origin." Sometimes in the genitive singular, they have -oris, an analogical form with o from the nominative-accusative, for example corpus, corporis "body," but analogy from the genitive to the nominative is found only in aes. When we postulate that there was no analogical leveling, we should reconstruct *$h_2$éies- in PIE but this form is quite unusual.

Another problem pointed out for aes is that usually the vowel sequence ae or ao as a result of the loss of *i between the vowels gives ā as in domās <*doma-ie-si and mālo <*māvolō. Meiser (1998: 88) states that the contraction rule did not work in the first syllable. But this rule can just be applied to aes, and we need more words for which the rule worked.

2. *argentum* "silver"

The word argentum can be compared with Avestan (Av.) ərəzata-, Old Persian (OPers.) ardata- Old Irish (OIr.) argat and Skt. rajatám[6] "silver." The Avestan form implies the zero-grade in the root, that is, *$h_2$rg- and the Latin form also reflects the zero-grade root *h_2rǵ-[7]. The OPers. and OIr. forms are indeterminate as to grade (Adams 1999: 50).

Mayrhofer (1994: 426) gave an explanation for the root vocalism in Sanskrit, claiming that raj- was a result of irregular Vṛddhi of *rj-. If we adopt his explanation, we just postulate one form *h_2rǵ-nto- for PIE though the Vṛddhi is, as he mentioned, irregular and not well grounded. Another explanation might be that the root shows a schwebeablaut *$h_2$reǵ ~ *$h_2$erǵ[8] but this is not acceptable without further explanation, either. Here we postulate *h_2rǵ-nto according to Mayrhofer.

In some branches of Indo-European families, we could find some other words built on the root and other Caland suffixes. Gr. ἀργός < *ἀργρός, Skt. rjrá- "shining, quick" are derived from *h_2rǵ-ró-, and from *h_2rǵ-i-, Gr. ἀργι-όδους "white-toothed" and Skt. rji^{th}-śvan- "having quick dogs."

There is no direct trace of u-stem adjective but in Greek, Sanskrit, and Tocharian, we find the form enlarged with one other Caland suffix, Gr. ἄργυρος "silver," Skt. adj. árjuna- "white" and Tocharian (Toch.) A ārki- Toch. B ārkwi[10]. Gr. ἄργυφος "silver-white" is also enlarged by the –φο.

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[4] In Lucretius 6. 1045, we find the form ahenis with h used as a hiatus breaker (Leumann 1977[5]: §179 III b β). See also Nishimura (2011: 187) for its phonetic development in Latin.

[5] Among masculine and feminine s-stems in Latin, there are a few words for which oblique forms replaced their nominative. They are m. cinis "ash" and f. mulier "woman."

[6] As an adjective, the word means "shining."

[7] Schrijver (1991: 67) explains the initial a not only in Latin, but also in OPers. and OIr. as a result of the development *h_2r > *ar.

[8] This is needed to explain the forms below, for example, Gr. ἄργυρος "silver."

[9] To add to them, Hittite harki- "white."

[10] On the development in Proto-Tocharian, see Adams (1999: 50).

Avestan s-stem noun *arəzah-* "evening" can also be connected to the forms above. Compared with the other u-stem adjectives and s-stem nouns in the Caland system, ἄργυ-, *árju-* and *arəzah-* are thought to have e-vocalism in the root, that is $*h_2érǵ-u-$ and $*h_2érǵ-os-$, respectively.

Now we return to the form $*h_2erǵ-n̥to-$ ~ $*h_2r̥ǵ-n̥to$. The PIE suffix *-nt-* is also included in the Caland System; see Nussbaum (1976) and Rau (2009). Lowe (2011) listed the *-nt-* adjectives in Sanskrit, most of which have Caland variants in the other PIE languages. Lowe also mentioned, in connection with *argentum* that "Thematized Caland *-nt-* suffixes may be seen in Av. *arəzata-*, Lat. *argentum*."

This thematized *-nt-* suffix is not so frequently found in PIE and Lowe pointed out just one other possible candidate for that, Lat *nūntius* < $*neu̯e-nt-ii̯o-$[11]. The nt-stem adjective postulated for $*h_2r̥ǵ-n̥to-$ is thought to follow the amphikinetic ablaut $*h_2érǵ-on̥t-$[12] ~ $*h_2r̥ǵ-n̥t-és$ just as the nt-stem active present participles do. For the thematization, accented *-ó*, as suggested by the Skt. form, was added to the weak form.

To summarize, we can reconstruct the following table for the Caland system for the root:

s-stem neuter noun:	$*h_2érǵ-os-$
u-stem adjective:	$*h_2érǵ-u-$
ro-stem adjective:	$*h_2r̥ǵ-ró-$
i-stem adjective:	$*h_2r̥ǵ-i-$
nt-stem adjective:	$*h_2érǵ-on̥t-$ ~ $*h_2r̥ǵ-n̥t-és$

As suggested in Mallory and Adams (2006: 242), the words for "silver" were formerly used as adjectives before certain nouns such as $*h_2ei̯os-$ and became independently used as substantives.

3. *aurum* "gold"

Latin *aurum* has a cognate in Italic, that is, Sabine *ausom*; outside Italic languages there exist also Lithuanian (Lith.) *áuksa-* with secondary -k- and Old Prussian (OPruss.) *ausis*. The reconstructed form $*h_2eus-om$ is clearly related to the s-stem noun $*h_2eus-ōs$ "Morgenröte" from which Skt. *uṣấḥ* and Ionic Gr. ἠώς are derived[13]. There are other forms which imply that some Caland suffixes are combined with the root $*h_2eus-$ to derive adjectives, Skt. *usrá-* "reddish" < $*h_2us-ró$ and Gr. ἠι-κανός "hen" < $*h_2eusi-kano-$ "singing in mornings."

Skt. feminine (f.) *uṣar, usr-ás* "Morgenröte" can be a trace of PIE r/n-stem noun and it is also found as the first element of the adjective *uṣar-budh-* "getting up early." To this PIE r/n-stem noun, we may connect Lith. *aušrà* "Morgenröte." Skt. *ucchấti* "becomes bright" and its participle Young Av. *usant-* "becoming bright" are inchoative verbs on this root.

From the Skt. perfect *uvấsa* "has become bright," $*h_2e-h_2uós-$ might be reconstructed and in this case the root shows the different ablaut pattern $*h_2uós$ ~ $*h_2us$, while for s-stem noun we

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[11] But this thematization is not by a simple *-o* but *-ii̯o*.
[12] The strong stem is not attested in Indo-European languages.
[13] Lat. *aurōra* is derived from $*h_2eus-ōs$ with the feminine suffix *-eh_2* appended.

reconstruct $*h_2eus \sim *h_2us$. The former ablaut pattern can explain Toch. A *wäs*, Toch. B *yasa* "gold" $< *h_2ues\text{-}eh_2$.

To summarize, we can reconstruct the following table for the Caland system for the root:

s-stem noun:	$*h_2eus\text{-}\bar{o}s$
ro-stem adjective:	$*h_2us\text{-}ro\text{-}$
i-stem adjective:	$*h_2eusi\text{-}$
r/n-stem noun:	$*h_2eus\text{-}r/n\text{-}$

The o-stem noun $*h_2eus\text{-}om$, if we think that the word for "gold" is used in the way similar to the words for "silver" as discussed in the previous section, was originally an adjective with the meaning "shining like morning sun" and placed in the Caland system just as $*h_1re/oud^ho\text{-}$ "red."

4. *ferrum* "iron"

The etymology of *ferrum* "iron" is less determinative than the other words which we have already examined. One Latin cognate word is *firmus* "firm." On the derivation of *firmus*, Leumann (1977: 45) postulates $*d^herĝ^h\text{-}mo$, which has an enlarged root $*d^herĝ^h$ with $*ĝ^h$ suffixed to $*d^her$. The i-sound of the *firmus* is explained by the dialectal sound change $*e > i$ conditioned by the environment before rK (K = velar consonants). This postulated root $*d^herĝ^h$ was connected to the Skt. verb *dṛhyati* "make fixed."

But Rix (2001: 113) reconstructs $*delĝ^h$ for *dṛhyati*, and if we accept this reconstruction, *firmus* should not be derived from the root $*delĝ^h$ but $*d^her$. The PIE $*d^her$ is attested by, for example, Skt. *dadhāra* "has held," Lith. *derù* "am suitable". Skt. *dharman* neuter (n.) "support, law," m. "preserver" is also attested for the root. Lat. *ferē* "nearly" suggests that there was an o-stem adjective $*ferus$. And for *ferrum*, we could reconstruct $*d^her\text{-}ro\text{-}$.

Thus in Latin, we might find Caland adjectives in *-o*, *-mo*[14], *-ro* but outside Latin there is little and indeterminate evidence for the Caland system. Gr. θρᾰνος, θρῆνυς "footstool" may be a candidate but the forms have unexplainable long $*\bar{a}$ (θρᾰνος $< *d^hr̥\text{-}no\text{-}$) and the development of their meaning seem to require explanation.

We could conclude that for $*d^her$, the Caland system is found only in Latin, and that the system might have developed after the divergence of Italic family from PIE.

Another possibility which can also be pointed is that Latin *ferrum* was also originally an adjective with the meaning "firm" and combined with $*h_2eios\text{-}$ as *aurum* and *argentum*.

5. Conclusion

We conclude that the examined Latin words for individual metals are a part of the Caland system, though the word *ferrum* does not show strong evidence for the existence of related words in other PIE branches. In some branches of PIE, totally different words are used to denote "silver" and "gold"

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[14] If we accept the reconstructed form $*d^her\text{-}mo$, rejecting $*d^herĝ^h\text{-}mo$, we need to explain the i-sound of *firmus* not using Leumann's explanation.

and the word for "iron" had developed from *h_2eios-; this implies that the development from Caland adjectives to substance nouns had not taken place during the PIE period.

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ラテン語の金属をあらわす名詞について

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要旨

　古典ラテン期に存在が知られていた金属を表す名詞のうち、借用語や語源が不明な語ではないものは 4 つある。それらは、aes「青銅」、 aurum「金」、argentum「銀」、ferrum「鉄」である。これらの語の語源については、すでに多くの研究があり、この論文ではその研究の成果を活用して、aurum と argentum が祖語の段階で Caland システムによる派生の結果である一連の語群の 1 つから派生していることを指摘した。ferrum についても同様の派生が行われた可能性があるが、各分派言語に残された証拠が乏しいため、それを肯定することは困難である。

(こだま・しげあき)