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disease.<sup>118</sup> [3. Commentaries] Amirdovlat's main pharmacological notations are in agreement with modern knowledge. The least obvious activity, the anti-hemorrhagic effects of A. catechu preparations, can be explained through a combination of the following: (a) the vitamin P-like activity of some of the components present (such activity is thought to be protective of blood capillaries); (b) the protein denaturing effect of tannins is able to stop superficial bleedings; and, (c) the hepatoprotective effect which would allow the liver to continue the production of the numerous anti-hemorrhagic principles that it synthesizes and secretes.<sup>119</sup> The fancy variety of so-called catechu, obtained from oak-apples, has nothing to do with authentic catechu, but seems to be a replacement containing certain of its active ingredients, e.g. tannins.

118. Windholz M et al (eds), *The Merck Index*. Rahway, NJ, 1983: 266.

119. (+)-cyanidanol-3, the d-form of (+)-catechin, has been shown to protect the liver from alcoholic damage, see Varga M & Buris, *Experimental Molecular Pathology*, 52 (1990), pp. 249-57. This compound also stabilizes blood microvessels, see T. K. Gaskina et al, Вюллетень Экспериментальной биологии и медицины, 108 (1989), pp. 28-30.

## ARMENIAN REDUPLICATED NOUNS MAMUL, MAMUR, and MAMUR

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There are several reduplicated nouns in Armenian, including both the Classical language and modern dialects, that share a common phonetic shape of *mamuR-*, where *-R-* stands for any liquid, and more generally *mamuC-*, where *-C-* stands for any consonant. Three such nouns, cited in Djahukian (1990: 2), are given in (1); the first two are attested in Classical Armenian, the third is a modern dialectal word:

- (1) a. *mamul* 'press; vice' (Classical)
- b. *mamur* 'moss' (Classical)
- c. *mamur* 'sawdust' (modern dialectal).

There are as well at least two other nouns with a parallel phonetic shape, given in (2):

- (2) a. *mamux* 'sloe; wild plum' (Classical)
- b. *mamuk* 'spider' (modern dialectal).

The existence of so many such words with a similar phonic

shape and an apparently similar internal structure, i.e. formed with reduplication, raises several important questions concerning their development. First, what is the source of reduplication in these nouns—in particular, is it inherited from Proto-Indo-European in any or all of them, or is it an Armenian innovation? Second, what is the nature of the interrelationships among these words—did any of them influence one or more of the others?

The first group, those in (1), are of particular interest in this regard for they, unlike the ones in (2), present a relatively clear picture as to their etymology, in terms of related forms within Armenian and/or cognate roots or formations elsewhere in Indo-European, and moreover are more closely connected phonetically, all ending in a liquid. As is generally the case in diachronic investigations, having some idea of the etymological starting point is crucial, but as becomes clear later, so too here is a high degree of phonetic similarity. Nonetheless, the words in (2) may prove to be important.

The relevant etymological connections for these nouns, as suggested by Djahukian (op. cit.), can be summarized as follows: *mamul* is related within Armenian to the verbs *malem* 'to smash, crumble, chop' and *mimlem* 'to rub', and the noun *mul-* 'mill', and outside Armenian to Old High German *muljan* 'to smash, crumble', and Greek *μύλη* 'mill', among other forms, all from a Proto-Indo-European (PIE) root *\*mel(H)-* 'crumble, grind'; *mamur*, on the other hand, lacks Armenian-internal cognates, but is clearly related outside Armenian to words for 'moss' in a number of languages, e.g. Old High German *mus* 'moss', Lithuanian *mūsos* 'mildew', and Russian *мох* 'moss', all from *\*m(e)u-s-*. Finally, *mamur*, too, has no clear cognate derivatives within Armenian but can be taken to derive from a PIE root *\*mer(H)-* 'rub; wear (out); strike', found in Hittite *marra-* 'cut into pieces', Greek *μαρμαίνω* 'rub out; destroy', and Old Norse *merja* 'strike', to name just a few of the related forms.

Moreover, Djahukian makes several statements in passing concerning the nouns in (1) that are relevant to the questions posed above. For example, he states, with regard to *mamul*, that "there is no similar reduplicative type among its derivatives in other languages", with regard to *mamur* that it "is formed by the model of *mamul* 'press' and *mamur* 'moss'", and finally, concerning *mamur*, that "no reduplication is observed among its parallels" elsewhere in Indo-European.

Although no further discussion is given about these nouns, these brief statements allow for a couple of inferences that relate to these questions. First, they suggest that reduplication in these nouns is an Armenian innovation and second, that ultimately *mamur* was carried along by—in some sense, "drawn into the orbit" of — *mamul* and *mamur*, given that they are claimed to have provided a model for the formation of *mamur*.

Even with such inferences, however, there are still several aspects of the development of these nouns that are left unaccounted for. In particular, it is not clear what the basis is for the introduction of reduplication. While it is true that Meillet (1935: 122) took the *-u-* vocalism of *mamul* to be the result of the supposedly expressive nature of this noun, and that Tischler (1990: 192) has suggested that the reduplication in *mamul* may have the same origin, it is fair to ask why this noun would be part of what Meillet called "le vocabulaire familier et expressif"; perhaps expressivity could be invoked for the related reduplicated verb *mimlem*, but it hardly seems appropriate for the noun. Moreover, one can legitimately question why *mamur* would have been influenced by *mamul* and *mamur*—no basis for the presumed analogical connection among these nouns is provided.

In what follows, therefore, an answer to these various questions is attempted, so that some clarification is thereby provided to the historical development of these three Armenian nouns.

A suitable point of departure for an alternative answer to these questions is the comparison, first suggested apparently by Solta (1960: 101), in which Armenian *mamul* 'press; vice' is related to the Hittite reduplicated noun *memal* 'grits, meal'. Hittite *memal*, it is generally agreed (see Tischler 1990), is related within Hittite to the verb *mall(a)-* 'grind, mill', from PIE *\*melH-*, and thus derives from the same root as Armenian *mamul* and its related verbs *malem* and *milmlem*.

Solta noted that Armenian *mamul* and Hittite *memal* were comparable on a purely formal basis ("*mamul* 'Presse', dem rein äußerlich das heth. *memal* 'ähnel'), presumably—though he did not say so explicitly—because of the difference in meaning ('press/vice' versus 'meal/grits'), a difference which reflects a difference in the function of the noun relative to the base root. In particular, Armenian *mamul* represents an instrument noun derived from *\*melH-*, in that a vice or press is something through which smashing or grinding can be accomplished, whereas Hittite *memal* represents a result noun from the same root, grits and meal being something that results from grinding or smashing.

A consideration of the function of these nouns, and the other Armenian nouns in *mamuR-* too, proves to be significant and can be argued to be the key to understanding their development and their interrelationships. Thus, in addition to the classification of *mamul* as having an instrument function and *memal* as having a result function, *mamur* 'sawdust' can be taken to be a result noun from its root, for sawdust is something that results from rubbing/cutting (of wood); especially relevant here is the meaning of Hittite cognate verb *marra-*, namely 'cut into pieces'. *mamur* 'moss', on the other hand, has no clear deverbal function inasmuch as there is no clear verbal root from which it is derived.

Therefore, the situation that arises is as follows: Hittite *memal* and Armenian *mamul* match in their base root and in their form, both being reduplicated, but do not match in their function.

On the other hand, Hittite *memal* and Armenian *mamur* match in form and in function but not in their base root.

What makes this network of matches among these forms especially interesting is the fact that there are other nouns in Hittite for instruments that show reduplication as well as some nouns for results that also show reduplication. For example, these nouns include *Gišsesarul* 'sieve' (with a derived denominal verb *sesarie-* 'to sift'), and *Gišhah(ha)r(a)-* 'rake' (with a derived denominal verb *hahharie-* 'to rake'). While neither word presents a clear etymology, one might conjecture that *Gišsesarul* derives from PIE *\*srew-* 'flow' (as in Sanskrit *śrav-ati*, the root being an enlarged form of *\*ser-* 'flow', as in Sanskrit *śi-sar-ti*), with a 'sieve' representing the instrument through which a certain type of flowing, e.g. of grain, is accomplished; similarly, it is likely (so Tischler (1983: 122) that *Gišhah(ha)r(a)-* derives ultimately from the root *\*AerO-* found in Greek *ἀρόω* 'to plow', Latin *aro* 'plow', Armenian *arawr* 'plough', etc., and quite possibly Hitt. *harra-* 'break, bruise, grind' and/or Hitt. *hars-* 'rip open, till (soil)', (etc.), with a 'rake' representing an instrument through which a type of working/breaking the ground is accomplished (and compare also the derived denominal verb *hahharie-* 'to rake').

Moreover, it is significant in this consideration of the role of reduplication in the formation of instrument nouns that the best example of a deverbal reduplicated noun that is directly reconstructible for Proto-Indo-European has the function of an instrument noun. This noun is *\*k<sup>w</sup>e-k<sup>w</sup>l-o-* 'wheel', and is indicated by the equation of Sanskrit *cakra-*, Greek *κύκλος*, and Old English *hweo(wo)l*. It is derived from the root *\*k<sup>w</sup>el-* 'turn', and it represents an instrument function, with a wheel being that by which turning is accomplished.

Important also in this discussion of reduplication in nouns is the fact that Hittite has some reduplicated result nouns other than *memal*, showing that reduplication in such nouns is a more

widespread phenomenon. These nouns include *lila-* 'reconciliation', apparently derived from the root of *la-* 'loosen', so that *lila-* can be taken as that which results from a loosening, e.g., of blame (and compare also the denominal verb *lilai-* 'to propitiate'), and *lulu-* 'welfare, prosperity', perhaps derived from the root that shows up in Latin *luere* 'release from debt; atone for', with well-being as something that results from debtlessness and atonement (and compare also *luluwai-* 'to further; to thrive').<sup>1</sup> These nouns suggest that reduplication was available for result nouns, at least as a Hittite-internal formation. Perhaps even more telling, though, is the fact that there are several reduplicated nouns in a number of Indo-European languages that denote different types of grains. These nouns include Sanskrit *kiknasa-* 'particles of ground corn', most likely from a PIE root *\*knes-* 'scratch', an enlargement of *\*ken-*, as found in Greek κνέωρος 'nettle', and possibly *cikkasa-* 'barley meal', though its base root is uncertain;<sup>2</sup> Greek ποιπύλη 'finest meal', with a reduplicative variant ποσπύλη, and a nonreduplicated form πύλη, all related within Greek to (and apparently derived from) πύλλω / ποιπύλλω 'quiver, shake', from a PIE root *\*pel(H)-* 'pour, flow, fill';<sup>3</sup> and Latin *furfur* 'bran', from a PIE root *\*gher-* 'rub' found

1. See Tischler (1990: s.vv.) regarding the connection of *lila-* with *la-* (though, following Neu, he treats it as a nomen actionis), and *lulu-* with *luere* (though he calls it an "unbefriedigend" etymology, preferring ultimately to declare the word "etymologisch unklar").

2 So Mayrhofer (1953: s.v.); admittedly, the absence of palatalization of the initial *k-* in *kiknasa-* is problematic, but does not in itself argue against a root connection with *\*kn-es-*.

3. See Chantraine (1974: s.vv.) and Frisk (1973: s.vv.) for discussion of these etymological connections.

in Lithuanian *gūrti* 'crumble', and in the initial part of English *grind*.<sup>4</sup> It thus appears that reduplication can be reconstructed as part of the word-formation process in Indo-European which gave rise to at least a restricted class of result nouns, i.e. those having to do with grains.

These facts when taken together lead to several conclusions. First, the evidence suggests that PIE had reduplication in at least some instrument nouns, witness *cakra-*, etc. Second, it can be

4 The derivation of Latin *furfur* from *\*gher-* is, to be sure, well-motivated semantically and is accepted by Walde-Hoffmann (1965: s.v.). Ernout-Meillet (1951: s.v.) are hesitant to say much about the etymology, referring to the word as "mot expressif" (presumably because of the reduplication, even though it is not clear why such a noun would involve an expressive formation) and suggesting without discussion a connection with "le groupe de arm. *borot* 'lépreux'". The connection with *\*gher-* requires the assumption that the initial *f-* of each syllable reflects a dialectal Latin (perhaps being rural, as suggested by the semantic field of the word in question) treatment of PIE *\*gh-*, as seen also in *fedus* 'goat', cited by Varro (L.L. 5,97) as a variant of *haedus* from PIE *\*ghaido-* (cf. Gothic *gaits*, and Ernout-Meillet (1951: s.v.)); this treatment is possibly the result of hypercorrection—see Wallace & Joseph 1991 and Joseph & Wallace 1991 for some discussion. Alternatively, *furfur* could derive instead from PIE *\*bhar-*, a nominal root that is the source of Latin *far* 'barley' and other grain words. Clearly, this set of forms requires further investigation, but whatever the etymological connection for *furfur*, the existence of a reduplicated grain word in Latin is significant for the analysis of *mamur*, though admittedly the relevance would be greater if *furfur* could be taken to be a result noun.

concluded that PIE had reduplication in at least some result nouns, based on the rather striking convergence in the subclass of nouns for various types of grain or grain-related items. Third, as stated above, Hittite *memal* and Armenian *mamur* show result-noun formation, while Armenian *mamul* shows instrument-noun formation.

These conclusions allow for a further one, namely that reduplication can be taken to be an inherited feature in Armenian both of *mamur*, as a result noun, and of *mamul*, as an instrument noun, and thus need not be an Armenian innovation with these two nouns, contrary to what was suggested in Djahukian's account.

As far as the relation between Armenian *mamul* and Hittite *memal* is concerned, these two might be considered to form a word equation despite the difference in their function. Given the availability of reduplication in both types of noun formation, i.e. both result and instrument nouns, it is possible, though admittedly not strictly provable, that both had the same function originally and thus that either *memal* or *mamul* underwent a shift of meaning from one function to the other, attracted by the general class of such nouns; since there is a subgroup of reduplicated grain-words, it may well be, under such a scenario, that it is Hittite *memal* that shows the innovative shift to a grain-related result meaning.

It is useful as an aside at this point to recall the observation made by Mkrtchyan 1976 and discussed further by Greppin 1982 that there are several lexical matches to be found between Armenian and Hittite involving reduplication, both in nouns and in verbs. Among the more revealing examples of such parallels are the forms in (3):

- (3) a. Hitt. *kakatinu-* 'sprinkle' / Arm. *kat'kat'el* 'spray, sprinkle'
- b. Hitt. *galgalinai-* 'make a musical sound' / Arm. *getgetank* 'a trill'
- c. Hitt. *kurkurai-* 'maim, mutilate' / Arm.

- k'rk'rem* 'destroy'  
d. Hitt. *kuškuš-* 'pound, bruise' / Arm. *koškočem* 'destroy'.

Mkrtchyan has suggested that they constitute a shared areal (that is, possibly substratal) innovation "in the area common to both languages". While the question of prehistoric connections between Armenian and Hittite, or, more generally, Armenian and various languages of ancient Anatolia, is an enormous one that cannot be investigated here, it can be pointed out that perhaps now *mamul* and *memal* should be added to the list of parallels, especially if the hypothesis of a semantic shift with *memal* is accepted. This is clearly an area that requires a considerable amount of further research, but the view of reduplication in both Hittite and Armenian being proposed here certainly seems relevant to any future discussion of these intriguing parallels.

There is now one remaining question concerning the *mamuR*-words, namely how to motivate the appearance of reduplication in *mamuR*, a noun for which, to judge from the Balto-Slavic and Germanic cognates, no reduplication is expected. The answer lies in a phenomenon which can be referred to as phonic attraction, i.e. phonetically-based lexical analogy,<sup>5</sup> often, but not always, involving rhyming words.

Some examples from English of phonic attraction can be cited here to clarify what this process involves, in each case involving a

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5. The notion of phonetically-based analogy ("phonic attraction") advanced here is somewhat different from what has been referred to as "phonetic analogy" (e.g. by Vennemann 1972, and see Kiparsky (1988: 393-4) for some discussion), whereby the behavior of a sound is carried along by ("assimilated to") the behavior of another sound or another instance of the same sound, usually of a different etymological source.

variant pronunciation of one word in the direction of another word already present in the language which bears a phonic relation only to the word in question. For example, *memento* is pronounced by many speakers as [momEnto] instead of [mEmEnto], and virtually the only basis for this innovative pronunciation appears to be the semantically and morphologically unrelated nouns *moment* and/or *momentum*.<sup>6</sup> Similarly, *academia* is pronounced by many speakers as [ækədəymɪə] instead of [ækədiymɪə], and while the basis for this innovative pronunciation might be thought to be an overlay of a pseudo-learnèd "Romance" (possibly Italian-esque) pronunciation<sup>7</sup> it is not clear why this word would be picked out for such a marker of Romance flavor (note, for instance, that a similarly learnèd word, *anemia*, seems not to allow a pronunciation \*[əneyɪə] at all); more likely, the innovative pronunciation may be based on the near-rhyme with *macadamia*, despite the semantic and morphological distance. Finally, in an example from a Columbus news broadcast of September 1991, the first part of the last name of the then-United Nations Secretary General, *Javier* (*Perez de Cuellar*), was pronounced as [haviar] (instead of the correct Spanish [haviEr]), and it may well have been based on the

6. There are two related forms/phrases involving *moment* that are semantically somewhat more compatible (via a meaning of 'memorable') with *memento*, namely *momentous* and *of great moment*, both of which could have played a role in the innovative pronunciation *momento*. Still, given the greater frequency of *moment*, as opposed to *momentous* and *of great moment*, and the absence of a truly compelling semantic basis for the analogy, the purely phonic connection seems to be highly relevant.

7. This suggestion was made by a few students of mine in my graduate seminar in historical morphology, for instance.

sound-alike noun *caviar* and on the perception of the name as foreign and thus in need of a foreign-like pronunciation.

A particularly instructive case of phonic attraction involving a clustering and reshaping of words sharing only a phonetic connection among them comes from the realm of child language (see also Joseph (To appear)). At the age of 3, my younger son Adam Clark-Joseph made a generalization over three adult speech words that were phonically related in that all contained the syllable [-læs-]. Based on the first such word he learned, *molasses*, which he pronounced as [moəsɪs] (with what for him was the regular suppression of syllable-initial [l]), he extended the initial [mo-] to the next two words he learned containing this syllable, both coming within a few weeks of his learning *molasses*; thus, at this stage of his development, he pronounced adult *elastic* as [moəstɪk], and adult *lasso* as [moəsɪ].<sup>8</sup>

It can be conjectured, therefore, that Armenian inherited reduplication in *mamul* and in *mamur*,<sup>9</sup> but not in the word for 'moss'—as its cognates suggest—which would at one time have been simply *\*mur*. The phonic generalization of containing the syllable -muR-, where R stands for any liquid, or perhaps more generally -muC-, where C stands for any consonant, attracted *\*mur* into the

8. There is of course the possibility of a semantic link, however ill-defined it might be, among *molasses*, *elastic*, and *lasso*, the first two via associations involving 'stickiness/stretchiness' and the latter two via an association with elongation. Nonetheless, phonic similarity is what unites these words most strongly.

9. Note that this account requires the assumption that even though *mamur* is attested only as a modern dialectal word, it can nonetheless be taken to be an "old" word, only accidentally missing from the Classical Armenian lexicon and preserved only dialectally now.

"orbit" of *mamul* and *mamur*, leading ultimately to the attested *mamuř*.

This claim of phonic attraction in the development of *mamuř* is admittedly hard to prove, but since the phenomenon of phonic attraction in general is a real one, as the examples from English show, and since the most likely starting point for 'moss' had no reduplication while the other nouns *mamul* and *mamur* could well have had reduplication, it is an inherently plausible account of the accretion in *mamuř* of an extra syllable, one that ostensibly is reduplicated but need not be so taken. It may even be the case that the additional Armenian words given above in (2) that have the shape *mamuC-*, namely Classical *mamux* 'sloe; wild plum' and modern dialectal *mamuk* 'spider', could provide the basis for a test of the claim of phonic attraction in the cluster of *mamul*, *mamur*, and *mamuř*, but only if a suitable etymology can be found for each of these words, deriving them from a nonreduplicated source and only if the appropriate generalization ranged over *-muC-* words and not merely *-muR-* words. This aspect of the development of the Armenian lexicon, therefore, awaits further investigation.<sup>10</sup>

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# VOICED ASPIRATED CONSONANTS IN THE NOR BAYAZET DIALECT OF ARMENIAN

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The so-called voiced aspirated stops and affricates of Armenian are of interest to general linguistics for two separate reasons. First and foremost they may serve as a cue for revealing the mechanism of such complicated phenomenon as consonant shift, a phenomenon which took place not only in Armenian, but in other Indo-European languages as well; secondly, they may throw light on the nature of certain peculiar sounds which are different from what are generally accepted as voiced aspirated stops, but may present some new variety of them with different ratio of voicing and aspiration.

Our earlier cross-dialectal investigation of these sounds, carried on over eight dialects, brought us to the conclusion that