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Zero-derivation and apophony in Old Turkic. A new approach to noun-verb pairs

Dorian Pastor

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Appendix. Transcriptions and Notations

Editorial Note

Turkic Languages, Volume 27, 2023, Number 1

The present issue of *TURKIC LANGUAGES* contains some contributions on Old Turkic.

Lars Johanson deals with the use of consonantal cluster conjuncts in the ingenious East Old Turkic runiform script system, which follows syllabic principles distinguishing front and back syllables. When two consonants meet, conjunct letters may indicate that no inherent vowel is to be pronounced before the second consonant. Special signs are added for combinations such as *ld* and *nd*, which have developed into characters in their own right.

Dorian Pastor's article discusses zero-derivation and proposes that apophony was a strategy of derivation in pre-Old Turkic. The semantic features of the East Old Turkic noun-verb pairs based on the bare root correspond to the "ergative formation" for suffixal derivation involving deverbal suffixes, which describes the fact that transitive verbs correspond to object nouns or adjectives, and that the subject nouns or adjectives stem from intransitive verbs. The transitive verb *kīs-* 'to pressure' yields the object noun *kīsīy* 'constriction'. The intransitive verb *kūrā-* 'to desert' plus the same suffix yields the subject noun *kūrāg* 'deserter'. Noun-verb pairs follow the same pattern, for instance, *kes-* 'to cut' (tr.) and *kes* 'piece, part' (object noun), or *karī-* 'to become old' (itr.) and *karī* 'old' (subject adjective). Non-suffixed nouns are derived from verbs: *toŋ-* 'to be frozen hard' (itr.) → *toŋ* 'frozen' (subject adj.). Derivation through apophony was another form of derivation, e.g. *toz-* 'to become dust' (itr.) → *tōz* 'dust' (subject noun).

Orçun Ünal shows the unignorable influence of Turkic on the other Altaic languages, featuring the verb **hür-* 'to foretell', which is the base of the nouns **hürō*, **hürk*, **hürim*, **hüriz* 'omen'. This verb and a nominal derivative of it are the sources of Kitan **pur-*, Jurchenic **piru-*, Proto-Korean **piru-* :*pil-*, and Proto-Mongolic **hüröye-* 'to bless', 'to pray'. It made its way from Turkic through Mongolic and Tungusic into Korean in a variety of forms.

Özlem Yigitoğlu deals with the naming of the constellations Great Bear (Ursa Major), Little Bear (Ursa Minor) and Orion, in ancient and modern Turkic languages, as well as the alternations of these names across these languages. She aims to ascertain the cultural and sociological interactions of Turkic-speaking peoples based on the forms these astronomical terms take in neighboring languages including Mongolian, Tungus and Chinese, and their variations in Turkic.

Ao Pan examines how women speak the Turkic language Salar, exploring the relationship between gender and the use of evidentials in describing perceived observation. Previous research has shown that all areas of language can differ between men and women. Focusing on the use of evidentials in expressing perceived information in Salar, the paper adopts a corpus-based methodology, including qualitative and

quantitative statistical analyses of speech data. Female speakers are said to have a tendency to use evidentials in reporting perceived information.

Ninel Malyševa and Marina Osorova deal with the factors determining the choices of names of medicinal plants in Yakut. Fifty-six names of medicinal plants, including the names *ärbähin*, *nä:m*, *boḡsuryan*, *kulun kuturuga* and *börö si:r oto*, are examined. These were selected via sampling from dictionaries and lexicographic sources. The analysis shows that two and three-component phytonyms are predominant in Yakut, and that the main criteria for giving names are the plant's place of growth, its appearance, or a scientist's name. Yakut has a significant layer of Russian words, which were mainly copied into the Yakut vocabulary in the pre-revolutionary period. Most of these are pronounced and written according to Yakut norms. Russian certainly prevails in the naming of plants. A rich vocabulary of the plant world has formed, reflecting the cultural, historical, social, and everyday experiences of Yakut speakers and their attitude to nature.

Tacetin Turgay discusses generic markers in Turkish, the nominal and verbal morphosyntactic markers involved in their derivations, and the interpretations they allow. He claims that aorist is the only true verbal marker of characterizing genericity. The nominal predicate marker {-Dİr} is compatible with a characterizing reading if an individual-level predicate is present, but never encodes a generic reading on its own. The analysis accounts for a number of facts about Turkish generics built on verbal as well as nominal predicates. Against the argument that all generic expressions are bipartite structures involving reference to kinds, the analysis supports the proposal that statements of characterizing genericity are tripartite structures involving a generic operator.

Vacide Köse and Javanshir Shibliyev describe the linguistic vitality of Greek, Turkish and English in Pile / Pyla, a peaceful, ethnically mixed village in Cyprus. English is the most powerful language, while Greek enjoys more prestige and has a huge amount of instrumental value. Both Greek and Turkish Cypriots prefer English on bilingual signs. Turkish-Greek or Greek-Turkish bilingual signs are lacking. A great majority of monolingual signs are in English. Russian is now emerging and inserting itself among the signage. The English-language university in the village has contributed greatly to the vitality of English. The present situation with Turkish currency has made the Turkish Republic of North Cyprus an attractive 'shopping mall' for Greeks, and all these factors contribute to the mushrooming of public signs in Greek in the areas inhabited by Turks.

This issue also contains Karl Reichl's review of Daniel Prior's book on a Kirghiz epos.

It is my sad duty to report that two excellent Turcological scholars have recently passed away: Heidi Stein, Leipzig, in January 2023, and Celia Kerslake, Oxford, in February 2024.

Lars Johanson

Zero-derivation and apophony in Old Turkic. A new approach to noun-verb pairs

Dorian Pastor

Pastor, Dorian 2023. Zero-derivation and apophony in Old Turkic. A new approach to noun-verb pairs. *Turkic Languages* 27, 10–34.

This article suggests that zero-derivation and apophony were strategies of derivation in pre-Old Turkic. It argues that the semantic features of the Old Turkic noun-verb pairs based on the bare root correspond to the so-called “ergative formation” described in Erdal (1991) for suffixal derivation involving deverbal suffixes, which describes the fact that transitive verbs correspond to object nouns or adjectives and that the subject nouns or adjectives stem from intransitive verbs (Erdal 1991: 169). For instance, the transitive verb *ur-* ‘to hit, to put’ yields the object noun *ur+uy* ‘seed’, while the intransitive verb *kürä-* ‘to desert’ plus the same suffix yields the subject noun *kürä+g* ‘deserter’. This study aims to show that noun-verb pairs follow the same pattern, for instance, *kes-* ‘to cut’ (tr.) and *kes* ‘piece, part’ (object noun), or *karı-* ‘to become old’ (itr.) and *karı* ‘old’ (subject adjective). This implies that non-suffixed nouns are derived from verbs (and not the other way round): *toŋ-* ‘to be frozen hard’ (itr.) → *toŋ* ‘frozen’ (subject adj.). Furthermore, this article proposes that derivation through vowel lengthening (apophony) was another form of derivation in Old Turkic, e.g. *toz-* ‘to become dust’ (itr.) → *töz* ‘dust’ (subject noun) and follows the ergative pattern as well. However, cases of zero-derivation or apophony are rather rare, so these derivation patterns might go back to an earlier stage of Turkic.

Keywords: Old Turkic, noun-verb, pairs, zero-derivation, apophony, root

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1. Introduction

In this paper,¹ I discuss the so-called Old Turkic “noun-verb pairs”. I attempt to show that Old Turkic had a system of zero-derivation and that there was a connection between zero-derivation and the “ergative-formation” noted by Erdal (1991) for several cases of suffixal derivation in Old Turkic.

1 I owe a debt of gratitude to Marcel Erdal (Berlin) for his useful feedback and the attention he devoted to my work. I am equally grateful to Agnes Korn (Paris) for the challenging discussions and precious support which allowed me to enrich this article, to Yvonne Treis (Paris), who provided a much appreciated and helpful outside perspective, and to Murad Suleymanov (Paris) for assisting me in locating relevant academic sources. I would also like to thank the anonymous reviewers for their valuable comments.

The usual derivational process of Turkic consists of suffixation to a base (cf. Johanson 1998: 37–38). In modern Turkic languages, periphrastic constructions are another well-known type of derivation, but there are few such patterns in Old Turkic. The latter include *yok kıl-* ‘to kill’, literally ‘to make nothing’, and *yok bol-* ‘to die, to disappear’, literally ‘to become nothing’.

Zero-derivation, i.e. changing of an item from a given category to another category without suffixation, e.g. *aç* ‘hunger’ / *aç-* ‘to be hungry’, might have been another, less frequent, means of derivation in Turkic.

Zero-derivation is defined by Bauer & Valera (2005b: 8) as “a derivational process linking lexemes of the same form but belonging to different word-classes”. It is considered productive in languages such as English (Lipka 1992), French (Kerleroux 2017), Maya and some Austronesian and Australian languages (Bauer & Valera 2005a, Vapnarsky & Veneziano 2017). Zero-derivation is a much-debated subject, with some researchers maintaining that the distinctions between word-classes are superficial (Chomsky 1970); this led to the concept of neutrality across word classes (Farrell 2001). More recently, the notion of “polycategoriality” has emerged (Vapnarsky & Veneziano 2017), where zero-derivation is considered a predictable process as opposed to oriented and unpredictable conversion. Kihm (2017) suggests that zero-derivation is a single lexical network of two distinct lexemes subsuming two distinct paradigms that are phonologically indistinguishable.

Apophony can be defined as a vowel alternation which effects a grammatical change, e.g. singular vs. plural; noun vs. verb.² It is a very well-known phenomenon in Indo-European and Semitic languages.

Apophony can affect (Bauer 2003: 32–36):

- Quality. For instance, it was productive in Old English and yielded minimal pairs such as English *blood/bleed* (noun/verb), *foot/feet* (singular/plural), or *song, sing, sang, sung* (noun/verb (PRS)/verb (PST)/participle); as well as in German, e.g. *Mutter* ‘mother’/ *Mütter* ‘mothers’.
- Tone. In some languages such as Kanuri (Nigeria), verb inflection displays tonic changes, e.g. *lezê/lezé* ‘go’ (conjunctive, falling tone/ optative, high tone);
- Stress. For instance, some English N-V pairs display stress difference, e.g. *import/impórt* (noun/verb).
- Quantity. This is well-known in Baltic languages, see, e.g. Petit 2003, 2004), for instance, in the indicative future in Latvian (Petit 2004: 17–18), where some verbs in the third person have a short vowel, by opposition to the other persons, having a long vowel, or for derivation, e.g. *mūšti* ‘to hit’ → *mūšris* ‘battle’ (Lithuanian, Petit 2003: 445).

2 Phenomena such as monophthongization and compensatory lengthening are not considered apophony under this approach.

In this paper, I focus on Turkic verb ↔ noun pairs showing the bare root, and I discuss semantic parameters to understand whether the phenomenon is predictable and corresponds to a semantic pattern. My approach is philological and aims to identify Old Turkic data and point out the relationships that exist among them. I argue that zero-derivation and quantitative apophony belonged to the morphological system of pre-Old Turkic, as N-V pairs can be analyzed along the lines of the so-called “ergative pattern” described by Erdal (1991). This pattern suggests that certain morphemes yield object nouns or adjectives when suffixed to transitive verbs, and yield subject nouns or adjectives in combination with intransitive verbs.

This paper discusses Old Turkic, mainly Old Uyghur, and Middle Turkic, mainly Karakhanid. Other varieties, such as modern Turkish, will be specified when they are addressed.

2. Defining the data

2.1. Earlier discussions

In Old Turkic, zero-derivation is generally known as “noun-verb pairs” (hereafter, N-V pairs). Several authors have discussed it.

Kažibekov (1985) devotes an entire volume to this topic in several Turkic languages. Authors such as Sevortʻjan (1978: 229–230) and Kažibekov (1985: 122) consider N-V pairs of Turkic as belonging to “an old model of noun-verb formation” which predates the first written attestations of Turkic. Doerfer (1982: 113) also suggests the possibility of N-V Old Turkic pairs belonging to an old system. However, concerning the question of whether zero-derivation is a morphological process of Old Turkic, no consensus has been reached so far. In recent works, Johanson (1998: 37), briefly address the phenomenon as “homonymous stems”. Erdal (2004: 228) says that the existence of zero-derivation “cannot be excluded” without further comment.

Hatiboğlu (1970) attempts to establish a full inventory of Turkish and Old Turkic N-V pairs and concludes that the directionality of the derivation is from noun to verb. This spawned a strong reaction from Tekin (1973), who observes that the presumed cases of pairs often (1) either seem to be zero-derived synchronically, but in fact the noun is derived by a suffix historically, which has lost the final syllable, (2) or are etymologically unrelated homophonous pairs. As a result, he retains only a small part of the pairs proposed by Hatiboğlu. Hatiboğlu’s and Tekin’s articles were followed by a series of publications including Türk (1999) or Bağrıaçık (2018), which essentially restate what was suggested by the two earlier authors. As for Alibekiroğlu (2019), he discusses the topic and proposes a direction noun → verb.

2.2. Tekin's (1973) criteria

Tekin (1973) suggests a set of criteria to assess which N-V pairs are real cognate N-V pairs.

(a) The morphological criterion:

Tekin rejects N-V pairs one member of which is morphologically derived and later underwent a phonological erosion, leading to synchronically similar forms for nouns and verbs such as Turkish *ağrı*- 'to have pain' and *ağrı* 'pain', the latter going back to Old Turkic *ayrıy* (see Table 1).

Table 1. Some examples of Turkish N-V pairs resulting from suffixal derivation with phonological erosion

Turkish	Old Turkic	
nominals	from	verbs
<i>ağrı</i> 'pain'	< <i>ayrıy</i>	<i>ayrı</i> - 'to suffer'
<i>damla</i> 'drop'	< * <i>tamlay</i> ³ (Ottoman Turkish)	<i>tamla</i> - 'to drop' (Ottoman Turkish)
<i>ekşi</i> 'sour'	< <i>ekşig</i>	<i>ekşi</i> - 'to turn sour'
<i>kuru</i> 'dry'	< <i>kuriy</i>	<i>kuri</i> - 'to dry'
<i>yama</i> 'patch'	< <i>yamay</i>	<i>yama</i> - 'to patch'

(b) The vocalic criterion:

The nouns and verbs should not differ in vowel length. Tekin assumes that apparent pairs such as *sāl* 'raft' / *sal*- 'to move' are not related.

(c) The semantic criterion:

The nouns and verbs have to be semantically close; thus, Tekin rejects several pairs, including:

Table 2. Pairs rejected by Tekin on semantic grounds

Nominals	Verbs
<i>ög</i> 'mother'	<i>ög</i> - 'to think'
<i>sal</i> 'raft'	<i>sal</i> - 'to move'
<i>sok</i> 'envious'	<i>sok</i> - 'to beat, to crush'
<i>sin</i> 'tomb'	<i>sin</i> - 'to break'
<i>uč</i> 'extremity'	<i>uč</i> - 'to fly, to die'
<i>yan</i> 'hip'	<i>yan</i> - 'to come back'
<i>yaz</i> 'summer'	<i>yaz</i> - 'to spread'

- 3 Contrary to what Nişanyan (2018: 165) maintains, Turkish *damla* 'drop' does not go back to Ottoman Turkish *tamlam*, derived with the deverbal suffix $\{-(X)m\}$, since word-final $^{\circ}m$ is preserved, e.g. Turkish *ölüm* 'death' from *öl*- 'to die', *yarım* 'half' from *yar*- 'to split'. Turkish *damla* is more likely **tamlay*, showing the deverbal suffix $\{-(X)G\}$. For an in-depth discussion of derivation in Old Turkic, see Erdal (1991).

Thus, a large proportion of the pairs proposed by Hatiboğlu are rejected by Tekin, who retains those listed in Table 3, and concludes that true instances of N-V pairs are extremely rare.

Table 3. Full list of Old Turkic N-V pairs retained by Tekin (1973)

Nominals	Verbs
<i>ač</i> ‘hunger’	<i>ač-</i> ‘to be hungry’
<i>köč</i> ‘migration’	<i>köč-</i> ‘to immigrate’
<i>karı</i> ‘old’	<i>karı-</i> ‘to become old’
<i>koš</i> ‘pair’	<i>koš-</i> ‘to unite’
<i>oy</i> ‘hole, cavity’	<i>oy-</i> ‘to hollow out’
<i>sış</i> ‘swelling’	<i>sış-</i> ‘to swell’
<i>tün</i> ‘breath’	<i>tün-</i> ‘to breathe’
<i>toŋ</i> ‘frozen’	<i>toŋ-</i> ‘to freeze’
<i>tuš</i> ‘meeting’	<i>tuš-</i> ‘to meet’

I think that Hatiboğlu’s misinterpretation of the data may partly be due to his not distinguishing Old Turkic from Turkish.

Alibekiroğlu (2019: 304) does not take into account that Tekin rejected e.g. Turkish *yama-* ‘to patch’ / *yama* ‘patch’, *uğraş-* ‘to deal’ / *uğraş* ‘occupation’, and *böğür-* ‘to moo’ / *böğür* ‘flank’ as N-V pairs. The forms *böğür-* ‘to moo’ and *böğür* ‘side, flank’ are etymologically unrelated; see, among others, Tekin (1973: 41), Tietze (2002: 380).

2.3. Other questionable pairs

Table 4. N-V pairs ending in °*k*, °*š* and °*z*

Nominals	Verbs	Could be assumed as derived with
<i>bük</i> ‘corner’	<i>bük-</i> ‘to bend, to bow’	verbal suffix {-(X)G} ⁴ denominal suffix {-(O)G}
<i>sik</i> ‘penis’	<i>sik-</i> ‘to copulate with’	
<i>öyük</i> ‘quicksand’	<i>öyük-</i> ‘to sink’	
<i>sış</i> ‘swelling’	<i>sış-</i> ‘to swell’	verbal suffix {-(Xš)} denominal suffix {-(X)š}
<i>tuš</i> ‘meeting’	<i>tuš-</i> ‘to meet’	
<i>tüş</i> ‘stop, break’	<i>tüş-</i> ‘to stop’	
<i>yariš</i> ‘competition’	<i>yariš-</i> ‘to compete’	
<i>tüz</i> ‘equal, flat’	<i>tüz-</i> ‘to level’	causative suffix {-(Xz)} denominal suffix {-(X)z}

Following upon Tekin’s criterion (a), see Section 2.2 above, one could argue that Old Turkic pairs ending in °*k*, °*š* and °*z* are ambiguous, since they might contain a nominal

4 For the use of ° and X in the notation of suffixes, see, e.g., Erdal (1991).

suffix; i.e. these nouns or verbs may be deverbal nouns and deverbal verbs derived from unattested verbs. Tekin, see Table 2, mentions *tuš/tuš-*, *koš/koš-* and *siš/siš-* as cases of N-V pairs. Some other such pairs not mentioned by Tekin (1973) are shown in Table 4; they will be discussed in what follows.

2.3.1. Pairs ending in %k

The instances ending in %k could be cases of N-V pairs.

There is no known base **bü-*, or forms which might suggest its existence, from which the pair *bük/bük-* could be derived. Consequently, the pair *bük/bük-* is likely not an example of morphological derivation; see Section 3.2.2.2.

No base **öy-* or **öyü-* nor any derivative that could suggest such a verbal root, is known. Thus, the pair *öyük/öyük-* deserves further discussion regarding zero-derivation (Section 3.2.1).

As I will argue in Section 3.2.2.2, I consider *sik* ‘urine’ to be derived and *sik-* ‘to copulate’ as well as *sik* ‘penis’ to be cases of zero-derivation.

2.3.2. Pairs ending in %š and haplology

For this group of pairs, both haplology and zero-derivation are possible. Erdal (2004: 124–124) observes that haplology can occur when “two adjacent syllables share most phonetic features”, e.g. *yarliḡ* ‘order [ACC]’ < *yarliḡiḡ*.

Relying on Karakhanid data, Erdal (1991: 264, 2004: 124–125) argues that *tüš-*, *tuš-*, *siš-* and *koš-* could have arisen by haplological loss of the suffix {-Xš} of **tüšüs-*, **tušuš-*, **sišiš-* and **košuš-*. Concerning the pair *siš/siš-*, also mentioned by Kažibekov (1985: 83), Erdal (1991: 264) considers a connection between *siš* and **si-* ‘to break’ unlikely for semantic reasons. Since there is no known primary base for *tüš-*, *tuš-*, *siš-* and *koš-*, the hypothesis of haplology (that is, *tuš-* → **tušuš* > *tuš*) remains a possible explanation. I will, however, retain *tuš-*, *siš-* and *koš-* for further discussion (see Sections 3.2.2.1 and 3.4).

The verb *yariš-* ‘to compete’ and the noun *yariš* ‘competition’ are viewed as derived from *yar-* ‘to split’ by Clauson (1972: 972), *yariš-* being the result of *yar-* ‘to split’ with the suffix {- (X)š}. However, a derivative from ‘to split’ would not yield ‘competition’.⁵ Thus, *yariš* can be derived from *yariš-* either by a haplology of **yarišiš-*, as suggested by Röhrborn (2003: 244), or by zero-derivation.

2.3.3. Pairs ending in %z

- The adjective *tüz* ‘equal, flat’ and the verb *tüz-* ‘to level’ show closely related meanings. One could argue that they are derivatives from a hypothetical verbal root **tü-* with the deverbal suffix {- (X)z} for the nominal and with the

5 The suffixes {-Xš} and {- (X)š} are homophonous, but they have different functions. {-Xš} derives agent nouns from verbs (Erdal 1991: 262–274) while the suffix {- (X)š} derives reciprocal verbs from verbs (Erdal 1991: 552–573).

causative {-Xz} for the verb. Such a root is also suggested by Sertkaya (2013) as the base of Turkish *tüm* ‘all, entire (with deverbal suffix {- (X)m})’. However, only a single instance in the Kutadgu Bilig has been read *tüm*. Elsewhere this word appears as *tum*, *tom* or *töm* (Erdal, personal communication), with no attestations of *tüm* which would predate Turkish. There is thus not sufficient reason for positing a reconstructed **tü-*. The pair *tüz* / *tüz-* will be discussed in Section 3.2.

- As for the pair *toz-* ‘to become dust’ and *tōz* ‘dust’, the existence of the noun *tōy* ‘dust’ (Clauson 1972: 463) suggests a root **tō-* which would have yielded *tōz* and *tōy* with the deverbal suffixes {- (X)z} and {- (X)G}, respectively. However, this does not explain the verb *toz-*, which is unlikely to be derived from **tō-* since the suffix {-Xz} produces causative verbs. A haplological loss (*toz-* → **toz+uz* > *tōz*) is not conceivable either, because one would expect preservation of the last syllable due the difference in vowel quality. It is thus more likely that the resemblance between *tōz* and *tōy* is coincidental and that *toz-/tōz* is a case of apophony characterizing verb → noun derivation of the type discussed in Section 3.4.1.

2.3.4. Other pairs

Several pairs that can be found in earlier studies are not used in this paper either. For instance:

- The pair *kad* ‘blizzard’ / *kad-* ‘to solidify, to freeze’ is noted as homophonous by Clauson (1972: 594) and mentioned in Kažibekov (1985: 162). However, in more recent works such as Wilkens (2021: 317, 343), the verb is noted with a voiceless plosive, i.e. *kat-*, while the noun still has a voiced plosive, and its meaning (‘to be hard, stiff, to solidify’) likewise suggests that the noun and the verb are not related.
- In the pair *kōm* ‘wave’ / *kōm-* ‘to wave’, the verb is only attested in the DLT, without any example of its use. According to Erdal (personal communication), Mahmud Kashghari (Dankoff 1982: 401) deduces the verb *kōm-* from the verb *kōmiš-* ‘to be collectively excited about something’. However, *kōmiš-* is more likely to be derived from *kōmi-* ‘to be enthusiastic about something’, for which there are Uyghur examples in addition to the Karakhanid ones mentioned by Clauson (1972: 625). The verb *kōmi-* indeed might come from *kōm* ‘wave’, but the verb mentioned by Kashghari is dubious.

Furthermore, the following (quasi-homophonous) pairs are semantically too far apart:

- *iç* ‘inside’ / *iç-* ‘to absorb’;
- *äm* ‘medicine, vegetable remedy’ / *äm-* ‘to suck’.

3. A new approach to the N-V pairs

3.1 Definitions

In what follows, I propose a new approach analyzing the N-V pairs based on Erdal (1991: 169–172), whose terminology I follow here. I aim to show that cases of zero-derivation in Old Turkic behave in the same way as the Old Turkic derivation by certain suffixes called “ergative formation”.⁶ Erdal suggests that these suffixes are typically involved in the following derivation paths (see examples in Table 5):

- transitive verbs whose derivatives are “action nouns” and “object nominals”;
- intransitive verbs whose derivatives are “action nouns” and “subject nominals”.

It should be noted that the same suffixes may also derive other nominals, such as “(near) instrument nouns” that are likewise derived from transitive verbs, e.g. *bay* ‘bond, tie’ apart from the object noun ‘bale, bundle’ Erdal (1991: 182).

Table 5. Ergative formation in Old Turkic following Erdal: Suffixal derivation with {-X)G}

verbs	valency	nouns	category
<i>ba-</i> ‘to bind’	transitive	<i>bay</i> ‘bundle, bale’	object nominal
<i>ur-</i> ‘to hit, to put’	transitive	<i>uruy</i> ‘seed’	object nominal
<i>kürä-</i> ‘to desert’	intransitive	<i>küräg</i> ‘deserter’	subject nominal
<i>öl-</i> ‘to die’	intransitive	<i>ölüg</i> ‘dead, a corpse’	subject nominal

In what follows, I will analyze the potential N-V pairs, highlight the category of each form and compare each form with its suffixal derivative counterparts, if there are any. Comparisons with forms of similar meaning will also be made. The following features are considered:

- The valency of the verbs (transitive, intransitive);
- The category of the nominal forms (action, object, subject noun or adjective);
- Comparison, when possible, with other derivatives.

On the one hand, my data includes the pairs retained by Tekin (1973); see Table 3, Section 2.1. On the other hand, the pairs rejected by Tekin for reasons of difference

6 These suffixes are listed in Erdal (1991: 172–355). Obviously, this does not imply that all suffixes are of this type. Suffixes that pattern differently include among others {-GAn}, {-mAn}, {-GA} (Erdal 1991: 362–400), e.g. *kap-* ‘to gasp’ (tr.) → *kap-yan* ‘a snare’ (subject noun, Erdal 1991: 385), *sök-* ‘to tear (tr.)’ → *sök-män*, a title literally meaning ‘(the) breacher’, hence a subject noun (Erdal 1991: 388).

in vocal length as well as the pairs in $^{\circ}k/^{\circ}š/^{\circ}z$ mentioned in Section 2.2 will also be discussed. I also include new data from Old and Middle Turkic collected from Clauson (1972) for this project and not mentioned by Tekin (1973). All the meanings given in this paper are from Clauson (1972).

3.2. Attested forms

This section discusses potential N-V pairs attested in Old and Middle Turkic texts. Some additional forms can be deduced from derived forms (Section 3.3).

3.2.1. Denominals

This section discusses forms whose meaning suggests a derivation noun \rightarrow verb.

- *öyük* ‘quicksand’ / *öyük-* ‘to sink (in the quicksand)’: The substantive is mentioned by Clauson (1972: 272) and by Wilkens (2021: 546), who does not mention the verb. Clauson (1972: 272) cites the example *anıy ađa:kı: öyükti*: ‘his foot sank in the quicksand’. The meanings suggest that the noun is primary and the verb is derived from it.
- *us* ‘intelligence, power of discrimination’ / *us-* ‘to think’ is found in Middle Turkic. This pair is not mentioned by Tekin (1973), but Clauson (1972: 204, 241) notes that the two words are homophonous and may be semantically connected. Kažibekov (1985: 78–79) explains them as resulting from zero-derivation. According to Tezcan (1997: 164), the noun *us* could be a loanword from Khwarezmian *’ws* ‘understanding, conscience’. The latter is related to Avestan *uši* ‘awareness’, originally the dual of *uš-* ‘ear’, and Persian *hūš* ‘consciousness, reason’. In modern languages, the pair exists in Turkmen with *os* ‘mind’ and *os-* ‘to assume’ (Starostin 2003: 1190) as well as in some other Oghuz languages as Ottoman Turkish (Clauson 1972: 241); in Chuvash (*as*) and Turkish and Karaim (both *us*) only the noun exists. The meanings do not tell us whether the noun or the verb emerged first, but if *us* is an Iranian loanword, then the verb *us-* is derived from the nominal form.
- One further case is *sik* ‘urine’ \rightarrow *sik-* ‘to copulate’, for which, see the discussion in Section 3.2.2.2.

There are also two onomatopoeic pairs that seem to be cases of zero-derivation:

- *čak* ‘bang (sound)’ / *čak-*: The verb is mentioned by Clauson (1972: 405) and described as an onomatopoeic verb. It is “used to describe [an] action of a violent character, physical or mental”; i.e. it refers to actions metaphorically related to sudden loud sounds and carries the meanings ‘to strike fire’, ‘to bite’, ‘to sting’, ‘to slander’, ‘to decry’, ‘to betray’.

- *čap* ‘smack (sound)’ / *čap-*: The verb is described as an onomatopoeic verb by Clauson (1972: 393–394). It is polysemic and can be used transitively (e.g. ‘to strike’) or intransitively (e.g. ‘to swim’, ‘to run’, ‘to gallop’, and ‘to hurry’).

The verbs *čak-* and *čap-* are best viewed as verbalizations of *čak* and *čap* (see also Section 4).

3.2.2. Deverbals

This section discusses forms which correspond to the ergative pattern (Section 3.1), suggesting the directionality verb → noun.

3.2.2.1. Intransitive verbs

- *ač* ‘hungry, hunger’ / *ač-* ‘to be hungry’: Clauson (1972: 17–19) notes that both are homophonous and have closely related meanings. Regarding the adjective/noun *ač*, he specifies that the original meaning is ‘hungry’ in a physical sense; Bilge Kagan East, line 38 *türük bodun ač arti* ‘the Türik (Turk) people was hungry’. The noun *ač* denotes a feeling and can be compared with *kaķiy* ‘anger’ mentioned as a subject noun by Erdal (1991: 190).
- *av* ‘hunting wild game; hunt’ / *av-* ‘to crowd round’: The meaning of *av-* is semantically close to *av*: Clauson (1972: 4) notes uses such as ‘people crowded round him’, ‘people gathered round the thing to see it’. The concept of encircling (a prey) can be linked to hunting. Indeed, ancient Turks traditionally organized battue hunts, during which they hunted in a coordinated group. They would surround the area where the game was located and then tighten the circle (see summary in Ošanov & Nugman 2015: 87). The verb *av-* is used with dative (Clauson 1972: 4), and considering the meaning of *av*, the latter appears to be the action noun of *av-*.
- The pair *är* ‘man (male person)’ / *är-* ‘to be’ is reminiscent of words referring to a living being which are derived from the verb ‘to be’, such as French verb *être* ‘to be’ and *être* ‘living creature; individual’ (TLFI), English *being* (the participle of *to be*) and *being* ‘living creature’, and German *Wesen* ‘being, creature’ which goes back to Middle High German *wesan* ‘to be’ (Kludge 1891: 393). The semantics of *är* being restricted to a male person can be compared to e.g. Azeri *kişi* ‘man’ (< OT *kiši* ‘human’, Clauson 1972: 753), Latin *homo* ‘human being’, then ‘man’ (de Vaan 2008: 288–289). Consequently, a semantic shift in proto-Turkic⁷ such as ‘being’ → ‘human’ → ‘man’ could be plausible.

7 The meaning of Chuvash *ar* ‘man’ (Paasonen 1950: 5) suggests that the word already meant ‘man’ in Proto-Turkic.

- *keč* ‘late’, ‘lateness’ / *keč-* ‘to be late’ are noted as homophonous by Clauson (1972: 692, 694). While *keč* is widely attested, the verb *keč-* is not attested before Middle Turkic (Erdal 1991: 495). However, it is found in some deverbals such as *keč+ik-* (Erdal 1991: 495) and *kečä* ‘late in the evening; night’ (Clauson 1972: 694–695, Wilkens 2021: 362), which is a fossilized gerund **keč-ä*.
- The pair *köp* ‘abundant’ / *köp-* ‘to swell, to foam, to boil over’ is noted by Doerfer (1982: 105). The two members have a close semantic relation and identical phonological features. The form *köp* ‘abundant’ can be considered a subject adjective of *köp-*, i.e. ‘overflowing’. It can be compared to *art-* ‘to increase’ and its derivative *artok* ‘additional’ (Clauson 1972: 202, 205).
- The pair *köč* ‘migration, emigration’ / *köč-* ‘to change one’s abode, to migrate’ presents a very close semantic relation as well as the same phonological form with a short vowel. It is accepted by Tekin (1973) (cf. Table 3) and also proposed by Kažibekov (1985: 58–59). The action noun *köč* can be compared to *yoriķ* ‘movement’ (derived from *yori-* ‘to walk’, cf. Erdal 1991: 173), while the verb could be compared to the Turkish complex predicate *göç et-* ‘to migrate’ [migration+do]. There are two derivatives of *köč-*, namely *köčgün* ‘immigrant’ (Erdal 1991: 329) and *köčüt*, which denotes a vehicle used for migration (such as a caravan, Clauson 1972: 695), and thus is an instrument noun.
- *karī* ‘old’ / *karī-* ‘to become old’ is one of the pairs accepted by Tekin (1973). The forms have a close semantic relation and the same phonological features, with a short vowel in the first syllable and a long one in the second syllable. The adjective can be considered a subject adjective, i.e., ‘who has aged’ and may be compared to *bädük* ‘big’, from *bädü-* ‘to grow up’.
- *maŋ* ‘gait’ / *maŋ-* ‘to walk’ are noted as homophonous by Clauson (1972: 766–767). Both contain a short vowel. The verb *maŋ-* is an intransitive verb, and *maŋ* can be analyzed as a derived action noun. Its meaning is reminiscent of derivations in {-Xš} noted by Erdal (1991: 369) such as *käl+iš* ‘a coming’ and *bar+iš* ‘a going, a leaving’.
- *toŋ* ‘frozen’ / *toŋ-* ‘to freeze’ is proposed by Kažibekov (1985: 74–75) but is not mentioned by Clauson (1972: 513) as homophonous. The adjective appears to be a subject adjective, i.e., ‘what has frozen’. There is no derivative of *toŋ-* in Old Turkic, but Azeri *donuq* ‘frozen’ (Orucov 2006: 674) may be a suffixal derivative.
- The pair *tuš* ‘meeting’ / *tuš-* ‘to meet’ is proposed by Kažibekov (1985: 75). Both forms have a short vowel in Old Turkic, but the only surviving form in modern Turkic (*düş-* in Turkmen) has a long vowel (Clauson

1972: 560). Thus, this pair will be discussed in Section 3.4. The substantive appears to be an action noun. It could be a case of haplology, as suggested by Erdal (1991: 264) (cf. Section 2.2).

- The pair *sış* ‘swelling’ / *sış-* ‘to swell’ is noted as homophonous by Clauson (1972: 857), who translates the substantive as ‘swelling’ or ‘boil’. Considering its resultative value, it is an action noun and may be compared to Turkish or Azeri *şışik* ‘inflated, puffy’.

3.2.2.2. Transitive verb

- *bük* ‘corner’ / *bük-* ‘to bend, to bow’: Both have a short vowel. The pair is not noted as homophonous by Tekin (1973) or Clauson (1972: 324) but is suggested as an N-V pair by Kažibekov (1985: 46–50). Nevertheless, there are notable similarities. The verb *bük-* has a transitive meaning, ‘to bend, to bow’ and also an intransitive meaning, ‘to feel aversion’. The noun *bük*, which according to Clauson (1972: 324) means ‘corner’ (in Argu) and ‘the corner post of a house’ in Old Uyghur (see also Tekin, 1993: 10–11), could be considered the object noun ‘what was bent, bowed’, since a corner results from what has been folded or bowed, bowing consisting of curving a shape. There is also a suffixal derivative of *bük-*, *büküm* ‘fold, skein’ (Clauson 1972: 327).
- The pair *kes* ‘piece, part’ / *kes-* ‘to cut, to cut off’ is mentioned by Clauson (1972: 748) as homophonous. The substantive *kes* is only attested in the DLT (Clauson 1972: 748). Judging by its meaning, it is the object noun of *kes-* and can be compared with *kesek*⁸ ‘piece, part’ (Clauson 1972: 749–750), which is derived from the verb *kes-* and is its object noun.
- The pair *oy* ‘hole, cavity’ / *oy-* ‘to hollow out’ is described as semantically connected by Clauson (1972: 265–266), also proposed by Kažibekov (1985: 65) and accepted as a pair by Tekin (1973). Both words have a long vowel. Clauson (1972: 266) gives the meaning of the verb *oy-* as ‘to hollow out (something *Acc.*, by removing its contents)’. The noun *oy* ‘hole, cavity’ is indisputably an object noun whose meaning suggests that the verb existed before the noun. It could be compared with the passive deverbal of *oy-*, namely *oyuk* ‘hollowed out, hole, cavity’ (Clauson 1972: 270) and Turkish *oyuk* ‘cavity’.
- *tik* ‘straight, vertical’ and *tik-* ‘to insert, to erect’: Both are noted in Clauson (1972: 475, 476) but they are not mentioned as being homophonous.

8 According to Clauson (1972: 749–750), the noun *kesek* ‘piece, part’ (not noted in Erdal 1991) is derived from *kes-*. However, phonologically one would expect **kesök* (compare *yerök* ‘split’, from *yer-* ‘to split’, Erdal 1991: 256). Unless there was an assimilation (i.e. **kesök* > *kesek*), the noun *kesek* may also be derived from an unattested **kese-* ‘to partition, to cut (in part)’; itself derived from *kes* and the verbalizer {-A}.

Both have a short vowel. The form *tik* is an adjective and can be interpreted as the object adjective of *tik-*, ‘what has been inserted or erected’. It is to be compared with the deverbal of *tik-* ‘to erect’, namely *tikme* ‘(something which has been) sewn’ (Clauson 1972: 482).

- *tüz* ‘equal, flat’ / *tüz-* ‘to level’: This pair shows closely related meanings. The noun and the verb are considered homophonous by Clauson (1972: 571–572) and related by Kažibekov (1985: 75–76). The adjective *tüz* can be considered an object adjective, i.e. ‘(what has been) leveled (tr.)’, that is, ‘equal, flat’. The transitive meaning of *tüz-* fits the ergative pattern.
- *sik* ‘penis’ / *sik-* ‘to copulate with (tr.)’: Erdal (1991: 203, 643) notes that *sik*⁹ ‘urine’ and *sid-* ‘to urinate’ could be derived from **si-* and suggests that *sik* ‘penis’ and *sik-* ‘to copulate’ are related to **si-*¹⁰ without further comment, and he does not include *sik* ‘penis’ in the list of words showing deverbal {-(O)K} (Erdal 1991: 224–261).

The meaning of *sik* ‘urine’ suggests a transitive root **si-*, of which urine could be an object nominal.¹¹ For the other forms, there are two options:

- a) *sik* ‘urine’ may also have meant ‘sperm’. Cross-linguistic parallels include Latin *urina*, which was also used with the meaning ‘sperm’ (and the verb *meiō* ‘to piss’ could also have meant ‘to ejaculate’, cf. Adams 1982: 92, 142), and Ancient Greek *ομείγω* (*omeik^hō*) ‘to urinate’ (related to Latin *mēiō*), whose agent noun *μοιχός* (*moik^hós*) means ‘adulterer’ (Piwowarczyk 2012).¹²
- b) *sik* ‘penis’ can be considered an instrument noun of *sik-* ‘to copulate with’. French *bite* ‘penis’ (slang), apparently a regressive formation of Old French *abiter* ‘to approach, to touch’ and also used in the meaning ‘have sexual intercourse with’ (cf. TLF1), is a parallel.

In summary, I assume that zero-derivation permits us to link **si-* and *sik-* ‘to copulate with’. Thus, I suggest:

- *sik* ‘urine’ is derived from **si-* with the suffix {-(O)K};
- *sik* ‘urine’ is converted to the verb to *sik-* ‘to copulate’ (cf. Section 3.2.1);

9 The word for ‘urine’ is noted *sig* by Erdal (1991) but transcribed *sik* in more recent sources such as Wilkens (2021: 612).

10 Erdal (1991: 645–650) does not include *sik-* in the entries containing the intransitive verbal suffix {-(X)K} (*sik-* is transitive).

11 Compare with *sidök* ‘urine’, object noun of *sid-* ‘to urinate’ (Erdal 1991: 243).

12 Admittedly, the reverse is also possible, e.g. American English slang with *dick* also used as a transitive verb *to dick*, meaning ‘to have sexual intercourse’ (Dalzell 2009: 284).

- then *sik-* ‘to copulate with’ is converted to *sik* ‘penis’ (instrument noun, cf. Section 3.1).

3.3. Reconstructed forms

This section presents some cases of reconstructed forms that can be considered N-V pairs derived from an unattested base.

3.3.1. **kiz* ‘red’ / *kiz-* ‘to become red’

The pair **kiz* ‘red’ / *kiz-* ‘to become red’ is mentioned in Kažibekov (1985: 173–174). Clauson (1972) does not note the adjective **kiz*, but mentions the verb *kizar-* ‘to become red’ as being semantically connected with the verb *kiz-*. Evidence for the adjective includes Uyghur *kizi-* ‘to become hot’ (Schwarz 1992: 666), which is most likely derived with the denominal suffix {-I}, and *kiz+{-KII}* ‘reddish’ (Erdal 1991: 98). The form *kiz+{-II}* ‘reddish’ could be derived from **kiz* or from the verb *kiz-* (cf. Erdal 1991: 99–100, 330). The adjective **kiz* is likely to be a subject adjective (i.e. ‘what has turned red’) derived from *kiz-* ‘to become red’.

3.3.2. **ör* ‘height, high, high ground’ / *ör-* ‘to rise’

This pair is proposed by Kažibekov (1985: 66). Both forms have a long vowel. The nominal *ör* is translated as ‘height, high, high ground’. Concerning the verb *ör-* ‘to rise’, Clauson (1972: 195) explains that it implies a constant “contact with the point of departure”, for instance for a plant ‘to sprout’. The adjective *ör* may consequently be considered a subject, i.e., ‘what has risen’. The verb *örlä-* ‘to rise, go upwards’ is also found in old texts (Clauson 1972: 230) and is derived from *ör* + the denominal verbal suffix {-IA}; the meaning of *örlä-* is similar to that of *ör-*. Alternatively, *örlä-* might be derived from the rather frequent *örü* ‘upwards’, thus a being syncopated form of **örü+lä-*; the same holds for *örki*, possibly from **örü+ki* (Erdal, personal communication).

3.3.3. **tat* ‘taste’ / *tat-* ‘to taste (tr.)’

This pair is proposed by Kažibekov (1985: 71). The noun **tat* ‘taste’ is mentioned by Clauson (1972: 449) without further comment. It can be deduced from the word *tatliḡ* ‘tasty’, which appears in the DLT (Dankoff 1984: 250; see also the indexes of Dankoff 1985: 181 and Atalay 1986: 586) and coexists with the synonym *tatliḡliḡ* ‘tasty’, which in turn is derived from *tatliḡ* ‘tasty’ (Dankoff 1985: 181, Atalay 1986: 584, Clauson 1972: 454). The Turkish pair *tat* ‘taste’ / *tat-* ‘to taste’ also shows that it goes back to an older form **tat* and not to *tatliḡ*, since the latter would yield **tati* (cf. Table 1). There is also the verb *tati-* ‘to taste (itr.), to be tasty’ (Clauson 1972: 452), which is considered a back-formation from *tatliḡ* by Erdal (1991: 207). However, it is also possible that the verb *tati-* is a denominal formed from **tat* with the intransitive suffix {-I}. Thus, in my opinion, *tatliḡ* and *tatliḡliḡ* on the one hand, and *tat-* and *tati-* on the other constitute evidence in favor of the existence of the N-V pair **tat/tat-*. The forms

tatliḡ ‘tasty’ and *tati-* ‘to be tasty’ are then both derived from **tat* ‘taste’ while *tatiḡ* is derived from the verb *tat-*.

Finally, given that **tat* has the same meaning as *tatiḡ* ‘tasty’, the deverbal of *tat-*, one may consider **tat* the object nominal of *tat-*; i.e. ‘(the) taste (which was tasted)’.

3.3.4. **yav* ‘bad’ / **yav-* ‘to be bad’

There is also evidence for a pair **yav* ‘bad’ / **yav-* ‘to be bad’. Clauson (1972: 876) views *yavlaḡ* ‘bad’ as derived from **yav*, which he mentions as being homophonous with **yav-*. Bang (1927: 4), who does not mention a nominal **yav*, suggests that *yavlaḡ* presupposes a verb **yavla-*, but he assumes that this verb is derived from a gerund **yavi*, presupposing a verb **yav-*, so that the primary form of *yavlaḡ* would have been **yavilaḡ*. In my opinion, the latter hypothesis is questionable since otherwise nonverbal elements originating from gerund forms are adverbs, cf. *ābrā* ‘again’, from *ābir-* ‘to turn’, *udu* ‘then’, from *ud-* ‘to follow’, *ulašu* ‘continuously’, from *ulaš-* ‘to join’, *ulayu* ‘all together’, from *ula-* ‘to join’, *örü* ‘upwards’, from *ör-* ‘to rise’, etc.; see Clauson (1972) for numerous examples. Consequently, **yavi* should rather mean ‘weakly’.

The unattested verb **yav-* is considered the base of *yaviḡ* ‘bad’ by Clauson (1972: 871), of *yavyan* ‘coarse, unsympathetic’ by Clauson (1972: 874), and of *yaman* ‘bad’ < **yav-man* by Erdal (1991: 388). From the point of view of ergative formation, *yaviḡ* could be a subject adjective of an intransitive root **yav-*.

Considering the meaning of *yavlaḡ* < **yavla-* ‘to be bad’, **yav* should have had a meaning close to ‘bad, evil’. As a parallel, considering the meaning of *yaviḡ* and *yavyan*, one can deduce a meaning close to ‘to be bad, evil’. Consequently, **yav* could possibly be considered the subject adjective of the intransitive verb **yav-*.

3.4. Quantitative apophony

3.4.1. N-V pairs showing apophony

Some potential N-V pairs differing in vowel length were excluded by Tekin despite their semantic closeness; see Section 2.2. I argue that they should not be rejected a priori, and that they could constitute cases of apophonic derivation. There are the following cases:

- *ēn* ‘sloping downwards’ / *en-* ‘to come down’: Mentioned in Kažibekov (1985: 144). The verb may appear as *in-*, but Clauson (1972: 168) explains that the original phoneme was *e*. The noun is rare and appears to mean ‘downward sloping ground’ (Clauson 1972: 165–166). Thus, one may consider it to be the subject nominal of the verb *en-*. It may be compared to Turkish *iniş* ‘descent, landing’ or *inik* ‘pulled down’.
- The pair *ḡōḡ* ‘pair’ / *ḡoḡ-* ‘to unite (tr.)’ is mentioned by Clauson (1972: 670–671) and noted as homophonous in Kažibekov (1985: 63–64). It is

even retained as an N-V pair by Tekin (1973), although the vocal lengths differ. Erdal (1991: 264) suggests a haplological loss of the suffix $\{-(X)\text{š}\}$ in the substantive derived from *koš-* (i.e. **košus > koš*), which is an object noun of the verb, i.e., ‘what has been united’. *koš* may be compared to *košuy* ‘poem, composition’ (Clauson 1972: 671).

- The pair *sāl* ‘raft’ / *sal-* ‘to move (tr.), to put into motion’ is rejected by Tekin (1973: 39) not only because of the difference in vowel length, but also because he considers the semantics to be unrelated. However, this latter point deserves to be discussed. Clauson (1972: 825) explains that *sāl* may refer to a “support” used “to cross the river”, which obviously involves movement. Confirmation comes from Turkish *salla-* ‘to wave (tr.), to shake’, first attested in Ottoman Turkish, cf. Nişanyan (2018: 731), which suggests verbalization of *sāl* ‘raft’ (Eyüboğlu 2020: 575, 577). Thus, a “raft” can be seen as what is “put into motion (to cross a stream)”, i.e. *sāl* can be the object noun of *sal-* ‘to move (tr.)’.
- *tīn* ‘breath’ / *tīn-* ‘to breathe’: This pair is not mentioned by Clauson (1972: 512, 514) despite the formal and semantic similarity. However, it is proposed by Kažibekov (1985: 78) and also mentioned by Tekin (1973: 46), who accepts it as a N-V pair despite the difference in vowel length. The substantive could be seen as action noun derived from the verb; it may be compared to the suffixal deverbal *tīniy* ‘breathing, breath’ (Clauson 1972: 519).
- The pair *tōz* ‘dust’ / *toz-* ‘to become dust, to volatilize, to diffuse (itr.)’; see discussion Section 2.3.3, is mentioned by Kažibekov (1985: 120–121) and by Clauson (1972: 571–572) as homophonous. The causative *tozut-* ‘to raise dust’ (Clauson 1972: 573) confirms ‘to become dust’ as the basis meaning. The vowel length in the nouns suggest a deverbal through apophony. Semantically, it corresponds to the ergative pattern, in that *tōz* is the subject noun of *toz-*.
- The pair *yār* ‘cliff’ / *yar-* ‘to split, to cleave (with a sharp instrument) (tr.)’ is mentioned by Kažibekov (1985: 118–119) but not by Tekin (1973), who probably rejected it because of the different vocal lengths. Crosslinguistic parallels include Latin *rūpēs* ‘cliff’, which is a deverbal of *rompere* (de Vaan 2008: 592–530), whose first meaning is ‘to cause to split open or explode’ (Galre 1968: 1667–1668) and English *cleave* and *cleft*, which are etymologically related to *cliff* (Kroonen 2013: 292–293) and to Old English *scielf* ‘top rock’ < **skelf-* ‘to split off’; cf. de Vaan (2008: 542), which is related to Latin *scalpere* ‘to scratch, to carve’. Clauson (1972: 953–954) mentions *yār* ‘cliff, cleft’ as having a long vowel, and notes that the short vowel of *yar-* ‘to split, to cleave’ is uncertain due to the existence of some modern forms with a long vowel. The noun is an object noun and may be compared to suffixal derivatives of *yar-*, namely *yartu* ‘something split off’ derived with the suffix $\{-dU\}$

(Clauson 1972: 959; also Erdal 1991: 334), *yaruḳ* ‘split’, ‘crack’, ‘breach’, ‘cracked’ with {-(O)K} (Clauson 1972: 962) and *yarim* ‘a single act of splitting’ with {-(X)m}, thus ‘half’ (Clauson 1972: 968–969).

3.4.2. A special case: *bū* / **bu-*

The pair *bū* ‘steam’ / **bu-* ‘to steam (itr.)’ is also suggested in Severt’jan (1978: 229–230). The nominal has a long vowel (Clauson 1972: 292) while the unattested verb **bu-* would have a short vowel.¹³

As pointed out by Clauson (1972: 292), *bū* ‘steam’ occurs in Old Turkic, while in modern languages, it is mostly the form *buy* that is found; cf. Table 6. However, *bū* survives in Tatar and Kazakh and also in some Turkish dialects, for example, in Samsun and Erzurum (DS 774, 778).

Table 6. ‘steam’ compared to ‘bundle’ in Turkic languages¹⁴

	language	short form	long form	cf. ‘bundle’
	Old Turkic	<i>bū</i>		<i>baγ</i>
	Middle Turkic		<i>buy, muγ</i>	<i>baγ</i>
Oghuz	Turkish ¹⁵	<i>bu</i> (dialectal)	<i>buğur, buğu,</i> <i>buğ</i> [bū] (dialectal)	<i>bağ</i> [bā]
	Azeri		<i>buğ</i>	<i>bağ</i>
	Turkmen		<i>bug</i>	<i>bağ</i>
Karluk	Uzbek		<i>bug’</i>	<i>bog’</i>
	Uyghur		<i>buy</i>	<i>baγ</i>
Kipchak	Karaim		<i>buv</i>	<i>baγ</i>
	Tatar	<i>bu</i>		
	Bashkir		<i>bīw</i>	<i>baw</i>
	Kyrgyz		<i>buu</i>	<i>baw</i>
	Kazakh		<i>buw</i>	<i>baw</i>
	Karakalpak		<i>puw</i>	<i>baw</i>
	Kumyk		<i>*buy</i> (in <i>buy-ak</i>)	
	Noghay		<i>buw</i>	<i>baw</i>
Siberian	Oyrot		<i>buu</i>	<i>buu</i>
Oghur	Chuvash	<i>pu</i>	<i>puv</i>	<i>pīyav</i>

13 It would thus differ from the root **bū-* which underlies *būd-* ‘to freeze’ and *būz* ‘ice’ (Clauson 1972: 298, 389 and Erdal 1991: 642).

14 Data collected in Starostin (2003: 319, 378), to which I have added Turkish *buğur* ‘mist’ (DS 781 and Dinç 2014: 77) and Chuvash *pu* (Paasonen 1950: 113).

15 Starostin (2003: 378) connects Turkish *bu* ‘scent, aroma’ to Old Turkic *bu* ‘steam’. But a borrowing from Persian *bū* < Middle-Persian *bōy*, ‘smell’ is more likely. Moreover, I assume the Turkish obsolete form *buhur* ‘mist’ to be the result of contamination with its Arabic-origin counterpart *buhar* ‘steam’, ‘mist’ (from Arabic *buhār*, Stachowski 2019: 94).

In monosyllables, the suffix $\{-(X)G\}$ is usually maintained, Azeri, Uzbek, etc., or compensated by vocalic length, Turkish, Kyrgyz, etc.. On this matter, *buy* can be compared with *bay* ‘bundle’ < *ba-* ‘to bind’; see Table 6.

These data suggest that the form with velar comes from a similar form in Old Turkic, i.e. **buy*. This **buy* is likely to be derived from **bu-* with the deverbal suffix $\{-(X)G\}$, the latter thus probably meaning ‘to steam (itr.)’. The derivative *buy* would then be a subject nominal.

The verb **bu-* could also be contained in Turkish *buğu* ‘steam, fog’ (also in Salar *bogo*, Ma 1993: 64), which could be derived with the suffix $\{-GI\}$;¹⁶ in Old Turkic *bus* ‘mist, fog’ (Clouston 1972: 370) and Khakas *pus* ‘fog’ (Arıkoğlu 2005: 181), which may contain a deverbal suffix $\{-(X)z\}$; and in dialectal Turkish *buk* ‘steam’ (Sevort’jan 1978: 239), which could also be derived with the suffix $\{-(O)K\}$. The forms are summarized in Table 7.

If the *r* in Khakas *purla-* ‘to smoke (itr.)’ and *purla+t-* ‘to make smoke’ (Arıkoğlu 2005: 180) is not a rhotacized $\{-(X)z\}$, it could contain **{-(X)r}*, a supposed suffix whose existence is unclear (Erdal 1991: 389–390).

Table 7. The verbal root **bu-* and its possible derivatives. Old Turkic and Turkish data

root	derived with	deverbal noun	further derivatives
<i>*bu-</i>	deverbal formative $\{-(X)z\}$	<i>bus</i> (< <i>*buz</i>) ‘steam’	–
	deverbal formative $\{-(X)G\}$	<i>buğ</i> ‘steam’	<i>buğla-</i> ‘to mist (itr.)’ ¹⁷
	deverbal formative $\{-(O)K\}$	<i>buk</i> ‘steam’	–
	deverbal formative $\{-GI\}$	<i>buğu</i> ‘steam’	<i>buğula-</i> ‘to steam’

Finally, the important point, as noted by Sevort’jan (1978: 229–230), is that all potential deverbal derivatives (Table 7) contain a short vowel. This implies that the root **bu-* had a short vowel as well. The vowel length therefore distinguishes it from the noun *bū*.

This relation between the short and long forms in modern Turkic can be shown as in Table 8.

16 The suffix $\{-GI\}$ is described by Erdal (1991: 320). Although the archiphoneme in $\{-GI\}$ is $/l/$ in Old Turkic, not $/X/$, a progressive assimilation involving rounding in a further stage of Turkic is possible. Cf. Turkish *burgu* ‘auger’, derived from *bur-* ‘to twist’, vs. Kazakh $\langle\text{бұрғы}\rangle$ *buryi* ‘drill’ (Shnitnikov 1966: 66) and dialectal Turkish of Kirkuk *burği* ‘vortex’ (DS II 797–798).

17 Translated as ‘tütmeç’, ‘duman çıkmak’ in DS II 781.

Table 8. Derivatives of **bu-*

Proto-Turkic <i>*bu-</i> ‘to steam’			
OT <i>bū</i> (apophony)	OT <i>*buy</i> (suffixal derivation)		
Tatar (etc.) <i>bu</i>	Azeri (etc.) <i>buğ</i> [buɣ] (preservation of final <i>ɣ</i>)	Kazakh (etc.) <i>buw</i> (^o <i>uy</i> > ^o <i>uw</i>)	Turkish (etc.) <i>buğ</i> [bū] (loss of <i>ɣ</i> + compensatory lengthening)

4. Discussion

4.1. Zero-derivation

The N-V pairs with the same vocal length and their semantic and syntactic features are summarized in Table 9:

Table 9. Derivation through zero-derivation

	nominals	category	verbs	valency
A	<i>aç</i> ‘hunger’	subject noun	<i>aç-</i> ‘to be hungry’	itr.
	<i>av</i> ‘hunting’	action noun	<i>av-</i> ‘to crowd round’	itr.
	<i>âr</i> ‘man’	subject noun	<i>âr-</i> ‘to be’	itr.
	<i>köç</i> ‘migration’	action noun	<i>köç-</i> ‘to immigrate’	itr.
	<i>kari</i> ‘old’	subject adj.	<i>kari-</i> ‘to become old’	itr.
	<i>keç</i> ‘late’, ‘lateness’	subject noun	<i>keç-</i> ‘to be late’	itr.
	<i>köp</i> ‘abundant’	subject adj.	<i>köp-</i> ‘to swell, foam, boil over’	itr.
	<i>*kiz</i> ‘red’	subject adj.	<i>kiz-</i> ‘to become red’	itr.
	<i>mañ</i> ‘gait’	action noun	<i>mañ-</i> ‘to walk’	itr.
	<i>*ör</i> ‘high’	subject adj.	<i>ör-</i> ‘to rise’	itr.
	<i>toñ</i> ‘frozen’	subject adj.	<i>toñ-</i> ‘to be frozen hard’	itr.
	<i>sış</i> ‘swelling’	subject noun	<i>sış-</i> ‘to swell’	itr.
	<i>*yav</i> ‘bad’	subject adj.	<i>*yav-</i> ‘to be/become bad’	itr.
	<i>bük</i> ‘corner’	object noun	<i>bük-</i> ‘to bend, to bow’	tr.
	<i>kes</i> ‘piece, part’	object noun	<i>kes-</i> ‘to cut’	tr.
	<i>koş</i> ‘pair’	object noun	<i>koş-</i> ‘to unite’	tr.
	<i>oy</i> ‘hole, cavity’	object noun	<i>oy-</i> ‘to hollow out’	tr.
	<i>sik</i> ‘penis’	inst. noun	<i>sik-</i> ‘to copulate with’	tr.
<i>*tat</i> ‘taste’	object noun	<i>tat-</i> ‘to taste’	tr.	
<i>tik</i> ‘straight’	object adj.	<i>tik-</i> ‘to insert, to erect’	tr.	
<i>tüz</i> ‘equal, flat’	object adj.	<i>tüz-</i> ‘to level’	tr.	
B	<i>öyük</i> ‘quicksand’	(subject) noun	<i>öyük-</i> ‘to sink (in the quicksand)’	itr.
	<i>us</i> ‘intelligence’	noun	<i>us-</i> ‘to think, to suppose’	itr.
	<i>sik</i> ‘urine’	(object) noun	<i>sik-</i> ‘to copulate with’	tr.
C	<i>çak</i> ‘bang (sound)’	onomatopoeia	<i>çak-</i> ‘to strike’	tr.
	<i>çap</i> ‘smack (sound)’	onomatopoeia	<i>çap-</i> ‘to strike’	itr./tr.

The forms in Table 9 can be divided into three groups:

Group A is the largest and includes both intransitive and transitive verbs. I disagree with Alibekiroğlu (2019: 303), who claims that the directionality of derivation of (all) the pairs is noun → verb and characterizes the function of verbs as self-describing (concerning nouns),¹⁸ since the semantic and syntactic features correspond to the “ergative formation” rather systematically, suggesting the reverse direction. Consequently, one may suggest that all the nouns or adjectives included in group A result from a zero-derivation from the verbs to nominals. For example, the pair *sik/sik-* shows a derivation in two steps: a first derivation which has to be in group B (*sik* ‘urine’ → *sik-* ‘to copulate with’) and the second derivation from *sik-* ‘to copulate with’ → *sik* ‘penis’, which is to be included in group A.

For pairs such as *koş/koş-*, *sış/sış-* or *tuş/tuş-*, the alternative explanation by haplology (see Section 2.3.2) is still possible.

Group B includes the forms whose directionality of derivation seems to be noun → verb. In the case of *öyük/öyük-*, the directionality of the latter may also be verb → noun (in which case it could be added to Group A); as for *us/us-*, the noun is borrowed.

The pair *sik/sik-* is also included in Group B and involves the conversion *sik* ‘urine’ → *sik-* ‘to copulate with’ (see Section 3.2.1).

Group C contains onomatopoeic forms. Cross-linguistically, onomatopoeic verbs are derived from the nouns, such as French *huer* ‘to boo’, *chuchoter* ‘to whisper’, or English *to boo*, *to clack*, etc. (Anscombe 1985). In Turkic languages, suffixes are usually employed, viz. Old Turkic {-KIr} and {-KI} (Erdal 1991: 465–473), which are no longer productive in Turkish, even though the suffix {-KIr} is still transparent; or Turkish {-IA}, e.g., *hav+la-* ‘to bark’ or *miyav+la-* ‘to meow’.

4.2. Derivation by apophony

The N-V pairs contained in Table 10 involve forms distinguished by vowel length, which I assume to be quantitative apophony (see Section 3.4):

Table 10. Derivation through quantitative apophony

nominals	category	verbs	valency
<i>bū</i> ‘steam’	subject nominal	* <i>bu-</i> ‘to steam’	itr.
<i>ēn</i> ‘sloping downwards’	subject adj.	<i>en-</i> ‘to come down’	itr.
<i>tōz</i> ‘dust’	subject nominal	<i>toz-</i> ‘to become dust’	itr.
<i>tūš</i> ‘meeting’	action noun	<i>tuš-</i> ‘to meet’	itr.
<i>tīn</i> ‘breath’	action noun	<i>tīn-</i> ‘to breathe’	itr.
<i>kōš</i> ‘pair’	object nominal	<i>koš-</i> ‘to unite’	tr.
<i>sāl</i> ‘raft’	object nominal	<i>sal-</i> ‘to move’	tr.
<i>yār</i> ‘cliff, cleft’	object nominal	<i>yar-</i> ‘to split, to cleave’	tr.

18 “Bu isimlerden kendilerini anlatan, kendi kendine olma anlatan fiiller türetildi, yani bunlar ortak kök olarak kullanılmaya başlandılar [Verbs which describe themselves were derived from these nouns; that is, they began to be used as common roots]”.

All the verbs have a short vowel, while the non-verbal forms have a long vowel. A similar phenomenon is seen in Turkmen, where short vowels characterize nouns while adjectives show long vowels; Doerfer, quoted by Erdal (1991: 301).

The ergative pattern concerning the forms in Table 9 also applies to the forms in Table 10. All the intransitive verbs have related subject nouns or adjectives, while the two transitive verbs have related object nouns.

Considering the forms *ḱōš/ḱoš-*, the possibility of apophony is more conceivable than that of haplology. It could be argued that the long vowel in the non-verbal form *ḱōš* may be due to a compensatory lengthening due to haplology, in which case other forms, *tuš/tuš-* and *siš/siš-*, would also be characterized by vowel length differences. That is, if one considers *ḱōš* to be haplological because of the vowel length difference, *tuš* and *siš* are probably not. I think that this should be the topic of an in-depth study.

4.3. Comparison

The pairs in Table 9, zero-derivation, and in Table 10, apophony, show the same relationship:

Figure 1. Derivation pattern for Old Turkic zero-derivation and apophony

Zero-derivation	(tr./itr.) verb primary stem-	→	(obj./subj.) noun primary stem
Apophony	(tr./itr.) verb primary stem- (short vowel)	→	(obj./subj.) noun primary stem (long vowel)

This parallelism suggests that a difference in vowel length should not be taken to exclude a connection between otherwise homophonous forms, but rather we are dealing with a consistent pattern of quantitative apophony.

Both derivation patterns show the direction verb → noun. Even though the direction verb → noun is considered less productive cross-linguistically by Bauer & Valera (2005b: 11–12), it is productive in Slavic languages, see discussion in Vaillant (1974), and is considered “infiniment productif” in Latin by Garnier (2016: 81), who dedicated a whole study to the topic. He identifies several cases of direction verb → noun, including the following:

Table 11. Some instances of the verb → noun direction in Latin *-a*-stems. Garnier (2016: 148–152).

verbs	nominals
<i>causārī</i> ‘to plead’	<i>causa</i> ‘affair’
<i>līctārī</i> ‘to fight’	<i>līcta</i> ‘wrestling’
<i>sectārī</i> ‘to follow’	<i>secta</i> ‘political party’
<i>occāre</i> ‘to harrow’	<i>occa</i> ‘harrow’

5. Conclusion

This paper discusses the so-called noun-verb pairs of Old Turkic and proposes that they demonstrate a pattern of zero-derivation and apophony for pre-Old Turkic. The approach is philological, and far-reaching conclusions are beyond the article's scope.

I argue that the zero-derived N-V pairs correspond to the “ergative pattern” described by Erdal (1991) for suffixal derivation. The pairs with apophony fit the ergative pattern as well. This implies that the criterion proposed by Tekin (1973), who rejects pairs distinguished by vowel length, cannot be upheld. Furthermore, the article shows that verbalization through zero-derivation is another pattern – even if less common – in pre-Old Turkic.

In this article, 34 noun-verb pairs were proposed, 26 of which show zero-derivation and eight apophony. There are several other possible pairs. Among others:

- *ḡōv* ‘backbite’ and *ḡov-* ‘to purchase, to persecute’ (cf. Clauson 1972: 580), though the semantic link is debatable. This would be a case of apophony;
- *subī* ‘taper’ and *subī-* ‘to taper’; see Clauson (1972: 784–785);
- *suk* ‘greedy’ and *suk-* ‘to thrust’; see Clauson (1972: 804–805);
- *tüš* ‘halt’ and *tüš-* ‘to fall down’, but semantically disputable;
- Ottoman Turkish *tamla-* ‘to drop’ (cf. Table 2) suggests a derivation from a noun **tam* ‘drop’, and Old Turkic has *tam-* ‘to drip’ (Clauson 1972: 503);
- *kör-* ‘to see’ and *köz* ‘eye’, but perhaps derived from **kö-*, cf. Erdal (1991: 326), which we can assume goes back to **kör*, itself an instrument noun derived from *kör-*.

Nevertheless, these examples require further discussion.

To conclude, it does not seem that zero-derivation and apophony were very productive forms of derivation in Old Turkic. Still, the data allows us to conclude that these processes did exist at one time and could go back to an earlier stage of Turkic, i.e. pre-Old-Turkic. Perhaps derivation by apophony is even older than zero-derivation. Conversely, it is unlikely that zero-derivation and apophony in pre-Old Turkic were spontaneous phenomena. Rather, they were part of the morphological system of Turkic and part of the ergative pattern already discovered for suffixal derivation.

Abbreviations

DLT	Dīwān Luyāt al-Turk
DS	Derleme Sözlüğü
OT	Old Turkic
itr.	intransitive
tr.	transitive

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