Epic Formulas and Intertextuality in 16th Century Hungarian Epic Songs

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Abstract

This paper gives a detailed analysis of the use of epic formulas in 16th century Hungarian epic songs. After presenting the previous scholarship on the question, it shows different methods of identifying and collecting formula-like textual repetitions using computational tools: from simple word collocations to almost identical line repetitions, identified with the help of character bigram analysis. The differentiation of internal (repeated in one poem) and external (shared across multiple poems) repetition allowed us to propose a totally new definition of epic formula, specific to early modern Hungarian poetry. The paper highlights the poems using the highest number of repetitions in both categories and identifies two poems poetically based on internal repetition as representatives of an archaic, oral composition technique: the *Cantio de militibus pulchra* and *A History of Emperor Rusztán*.

1 Introduction

1.1 The Characteristics of 16th Century Hungarian Epic Poetry

The first great period of Hungarian literature was the 16th century. From earlier times only a very limited number of texts, and even fewer poems, have been conserved: a real literary tradition seems to emerge only shortly before the devastating battle of Mohács, causing the collapse of the powerful medieval Hungarian Kingdom.

In the literary landscape of 16th century Hungary, the production of vernacular texts is still somewhat weak, although a wide range of poetic texts

were composed during this period. Circa 1500 poems survive from before 1600, and some dozens are lost but are known by reference. One of the most important, and the most popular poetic genre of the century (at least in academic discourse), is the epic or historical song, called *históriás ének*. These poems and their manuscript and printed sources are carefully registered in the *Répertoire de la Poésie Hongroise Ancienne* available online (I. Horváth et al. 2022). This manual is abbreviated as *RPHA* in the followings, and all 16th century Hungarian poems cited here are identified by entry number in the *RPHA*. No less than 186 Old Hungarian poems belong to the genre of historical songs, but we have the entire text (or at least a larger parcel) of only 173, plus some minor fragments. According to our calculations based on the material submitted to analysis, this genre has 25,137 strophes, 99,060 lines and 529,455 tokens.[1] Although the genre is intrinsically connected to the telling of contemporary warlike events, several other topics have been treated in the same form: the plot might have been historical or fictitious, antique, medieval or contemporary in inspiration, related to Hungarian or biblical history, or other European political events unrelated to Hungary. In our research project, which ran from 2021 to 2024, we used computational tools to explore the metric and poetic patterns of this corpus and the compositional technique used by the poets.[2] Our group prepared a lemmatised version of the poems (Maróthy et al. 2021; A. Horváth et al. 2023).

1.2 Oral Versus Written Patterns

The main peculiarity of the corpus is its dual oral and written character. We know from several (internal and external) sources that Hungarians were pleased to sing epic songs on different occasions and festivities; this fact is mentioned by Nicholaus Oláh, Galeotto Marzio, and Sir Philip Sidney (Oláh 2000, p. 58; Seláf 2020). The poems have several references to their oral performance. Scholars consent in the judgment that they were all written to tunes. Most of the poems are conserved in contemporary songbooks, with these mainly printed sources also containing the melodies that were used for singing other types of song as well (with lyrical rather than epic content). Therefore, while this is evidence that epic songs could be performed orally, there is no precise description of any of these performances. We know from the study of Ancient and Renaissance epics that rhetorical figures related to orality might simply be tributes to the Latin learned literary tradition without necessarily originating in a real-world oral tradition. Most of the conserved Hungarian historical songs themselves also contain marks of circulating in a fixed written form. The most important of

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[1] The texts analysed here are based on a modernised version of critical texts that can be found in the electronic edition of the *Régi magyar költők tára* (*RMKT*, Collection of Old Hungarian Poets).

[2] Our research, entitled A Computerised Metric and Stylometric Study of Old Hungarian Poetry, was supported by the National Research, Development and Innovation Office NKFIH of Hungary (project number: OTKA 135631) which ran between 2021 and 2024. Data and code are available at http://github.com/versotym/oldhun. The current members of the group are, in addition to the authors of this article, Andor Horváth, Szilvia Maróthy, Eszter Simon, Mária Finta, Krisztina Rákóczy, and Boglárka Pardi, among others. The authors warmly thank all former and current participants in the research project for their contributions to this article.

them is the acrostic: many of the historical songs include a Hungarian or Latin text if we read the first letter of each strophe vertically. It is also common that the conditions of composing a poem are recorded in the closing stanza of the text, which is also clearly a pattern of writing.

The very specific mixture of oral and written patterns in these historical songs shows the genre to be the combination of the remnants of a lost, sung and performed poetic tradition, and a newly emerging learned, rather sophisticated, written epic poetry, influenced by ancient models (such as the *Aeneid*). The heterogeneity of the genre is also perceivable in the different levels of the two types of pattern in the poems; in some cases, the rhetorical structure of a historical song reflects a prominently oral character. This is most obvious when a poem is full of epic formulas: rough verbal clichés employed several times, generally in the same metric position, and sometimes also occurring in other poems of the historical song corpus.

1.3 The Formula in Other Literary Traditions

The notion of the epic formula and formula-system were created by Milman Parry who proved their importance in Homeric epic (Parry 1928). The search for formulas was expanded to other prominent literary traditions, such as French *chansons de geste*, Middle English epics, Italian *cantari*, and the Spanish *Cantar de mio Cid* ("Song of El Cid"); their importance to the oral composition of folk poetry in the Balkan peninsula, specifically in Serbo-Croatian heroic ballads, has also been written about (De Chasca 1970; Kay 1983; Seláf 2020; Tatlock 1923).

We believe that it is necessary to provide a specific definition of the epic formula as it exists in each literary and folkloric tradition, including that of Hungarian historical songs. This corpus, just like the others, has some special features that must have influenced the use of formulas to distinguish some general conception of formulaic poetry. The poorness and monotony of rhyming bring this corpus closer to the *chansons de geste*, written in *laisses*, than to other forms of European epic poetry. While the ancient Greek epic mainly uses hexameters, and the French *chansons de geste* only decasyllabic lines, and on occasion, alexandrines, in Hungarian historical songs there is a greater variety of meters, with lines of six, seven, eight, nine, ten, 11, 12, 13, 14, 15, 16, 19, 23, and even 25 syllables, although the most common is the 11-syllabic verse. This metric variability foreshadows a somewhat higher variability of the formulas, as in Middle English.[3]

1.4 Definitions of the Epic Formula in Hungarian Literary Studies

Since the second half of the 20th century several analyses have succeeded in identifying formulaic expressions in the corpus of 16th century Hungarian poetry, with some authors trying to give a definition of the epic formula most

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[3] Windelberg and Miller refer to Fry, who "in addition to permitting variation in both lexical classes and syntactic-semantic structure, ... also admits variation in the metrical pattern" (Windelberg and Miller 1980, p. 32).

fitting to this poetic tradition. Due to the lack of facilitating computational tools, it was not possible to have a look at the entire corpus.

In the Hungarian scholarly tradition Béla Varjas was the first to search for epic formulas in historical songs. He claimed that formulas were applied mostly, but not exclusively, in epic songs: they could appear in all versified genres, and also in lyrical poetry (Varjas 1982, p. 202). Varjas extracted several formulas from the curious epic song entitled *Cantio de militibus pulchra* ("Fair Song of Soldiers", *RPHA* 369). Varjas also tried to identify the formulas of the *Cantio* in other historical songs of the period. He supposed that the anonymous author of the *Cantio* constructed his poem from elements borrowed from a contemporary common treasury of formulas and poetic tools. Varjas was searching for the "word-groups created according to the grammatical rules of versification and used regularly to express specific thoughts" (1982, p. 202). He considered as formulas not only the lexical, but also the grammatical, structural and compositional repetitions. However, on the other hand, he did not take into consideration the metric position of the formulas.

Varjas also made a catalogue of the epic formulas found in the *Cantio* and in one or more of the dozens of historical songs he read through. In a longer excerpt from Tinódi (16 verses), he identified formulas in every single line, some of which occur in a somewhat altered way in the *Cantio*, which uses very similar sentences in the description of a battle (1982, pp. 206–207). The number of internal formulas or repetitions is also very high within the poems. In Example 1 we have highlighted some of the formulaic lines and indicated with the same colour the lines that have identical, or extremely similar, lexical content.

In the 1980s and 1990s Amedeo di Francesco dedicated several studies to the epic formulas of 16th and 17th century Hungarian poetry (Di Francesco 2005). He applied the notion of "formulaic style" to explain the presence of formulas in a poetical tradition that involves both written and oral compositions. According to Di Francesco, this formulaic style was adopted by every Hungarian author of historical songs, independently of whether they primarily composed their works in written or oral form (Di Francesco 2005, p. 148). He claims that the authors composing in writing tried to imitate the style and the patterns of the oral epic poetry by the use of formulas.

Di Francesco already took into account the metrical positions of the formulas in the line. His approach occupies a midway position between Varjas' very large and open formula definition, and the formula as it was interpreted in most of the relevant western literary analysis since Perry (Kay 1983) which prescribed the combination of lexical elements and a grammatical structure in a specific metric position. However, his most relevant contribution to the debate was to distinguish internal (occurring only in one text, but several times) and external or shared formulas (present in more than one text).[4] He also proposed a typology of formulas according to their complexity and internal flexibility: for

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[4] In the rest of his study Amedeo di Francesco (2005) uses the term "formula" exclusively for external formulas, referring to internal ones simply as repetitions. There is in fact no difference between the two distinctions for him. Nevertheless, we also find it necessary to analyse the inner repetitions of a text, because it determines the structure of the text, and also because any lines repeated inside the text could have appeared also in other texts (of the same or of other poets).

Tinódi: *Peril of Szeged* (1552) - *RPHA 1334*

Magyarok (N) es (C) álló (P) seregöt (N) meghagyják (V),
Az (A) szárnya (N) mindkét (Pr) fél (N) öszveroppanának (V),
Nagy (Ad) erős (Adj) viadalt (N) akkoron (Ad) tartának (V),
Ott jeles terekek nagy sokan elhullának.

Nagy sok dob, trombiták oly igen harsagnak,
Nagy rettenetösen üvöltnek, kiáltnak,
Nagy szép festett lovak az mezőn jargalnak,
Kikről fő terekek elestek, megholtanak.

Az viadal köztök ám ott meglassódék,
Álló (P) seregekhöz (N) két fél takarodék,
Jézust (N), Allát (N) meg (VP) másodszor (NN) üvöltének (V).
Mindkét felől hamar taraszkokból lüvének.

Gyorsan nagy vakmerőn öszveroppanának (V),
Nagy (Ad) erős (Adj) viadalt (N) akkor (Ad) es (C) tartának (V),
Szekereket magyarok meg nem bonthaták,
Mert taraszk, puskákból sok golyóbist szórának.

(201–216. sor)

Cantio de militibus pulchra (1561) - *RPHA 369*

Két (NN) fél (N) öszve (VP) erősen (Adj) roppanának (V)
Az (A) törökök (N) mind (Pr) Allát (N) kiáltának (V),
Az (A) magyarok (N) mind (Pr) Jézust (N) kiáltának (V).

Két (NN) fél (N) öszve (VP) erősen (Adj) roppanának (V) ,
Reggeltül fogva mind estvéig vívának,
Szegény (Adj) magyarok/ban/ (N) sokan (NN) meghalának (V).

Törökök előtt magyarok futamának,
Magyarokat messze nem űzték vala,
Nap immáron hogy alámegyen vala.

Falka barmot távoly földen látának,
Magyar seregnek azt alíták vala,
Az törökök rajta rémültek vala.

Kevés magyar ismét nékiek tére,
Nagy (Ad) erős (Adj) viadalt (N) vélek (Pr) tartának (V),
Szegény (Adj) magyarok (N) sokan (NN) meghalának (V).

(115–129. sor)

Example 1: Textual parallels between two historic songs: Sebestyén Tinódi's *Peril of Szeged* (*RPHA* 1334) and the *Cantio de militibus pulchra* (*RPHA* 369). In the formulaic lines we have also noted the parts of speech each word belongs to in brackets, in order to show the level of grammatical parallelism: (N = Noun, C = Conjunction, P = Participle, V= Verb, A= Article, Pr = Pronoun, Ad = Adverb, Adj = Adjective, VP = Verbal Prefix, NN = Number Noun). The lines in pink, orange and green contain external or shared formulas (common to both authors), the blue and beige lines the inner formulas. We did not highlight the lines that only have parallels in other parts of the poems.

him a simple formula is an exact repetition, a composite formula allows some variations, while a complex formula involves fixed conjunctions and verbal locutions. His collection of examples was also limited to a small portion of the entire corpus of epic songs (Di Francesco 2005, pp. 156–164).

Di Francesco also differentiated the formulas according to their length: from very short ones, often reduced to a noun and adjective (ADJ+NOUN) structure, via those as long as a hemistich, to those occupying a good part of a strophe.

2   Revisiting the Formulaic Style

2.1   First Steps

On the basis of the formulas collected by Varjas and Di Francesco in the corpus of historical songs, we have attempted to identify lexical and structural repetitions and grammatical parallelisms in the corpus, and to examine their variety using different computational tools and methods.

The creation of a digital corpus (.txt and .json formats) of epic songs allowed us to search first simply for more occurrences of previously identified formulas with the help of keywords and regular expressions (concerning the creation of the digital corpus see Maróthy et al. 2021). The results confirmed to us the importance of variation in the use of formulas. For instance, while Di Francesco (DiF) was collecting the occurrences of the formulaic expression "vala nagy bánatja" ("they had great sorrow"), he failed to find the same expression in another verb tense "lőn nagy bánatja" ("in consequence they came to have great sorrow") identified in song *RPHA* 1328. In the same way he finds in the poem *RPHA* 1189 the expression "sokat gondolkodék" ("thought a lot") (see also the line "Harpagus ű róla sokat gondolkodék" ("Harpagus thought about them a lot")), but was not able to find "Róla Cresus király sokat gondolt vala" ("King Cresus had been thinking of them a lot") in poem *RPHA* 525, where the difference is again the conjugation of the verb *gondol* ("to think"). He finds the expression "nem sok idő múlván" ("in a while") in Gyergyai Albert's poem (*RPHA* 53) but fails to identify in the same poem its variant "nem sok idő múlva". According to Di Francesco the first form occurs in a total of 12 texts, in 15 lines, but the computer-based search could identify seven more texts containing this form. The variant "nem sok idő múlva" was found in a total of 11 texts. Besides Gyergyai's poem "The Fortunatus" (*RPHA* 560) is the only text containing both. The formula occurs more frequently at the beginning of the line, but not always!

Varjas accepted a much higher level of flexibility than Di Francesco, and Di Francesco severely criticised Varjas for a very loose definition of formulas. Varjas interpreted as formulas some expressions as simple as the naming of the fortress of Gyula as Vég-Gyula (a word composed of the epitheton "vég" meaning "end" or "of the border" giving "az Vég-Gyula…", "Vég-Gyulában", "Vég-Gyulábul" in lines three, 39, 41, 64, 79, 92 and 95 of the *Cantio* (*RPHA* 369). Another example of an overly loose definition of formula is when he considers

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We maintain the distinction between and terminology of internal and external formulas, taking both into account.

(DiF):	**Ezt hallván - - (-) I - - - - - (-) (-) (Tinódi, Szegedi, etc.)** Upon hearing this - - (-) I - - - - - (-) (-)
(OMH):	"**Ezt haluan** vajat es mezet vevek kezembe." "Hearing this, I took butter and honey in my hand."
(DiF):	**Csudálatos vala I - - - - - (-) (Batizi, Ilosvai, Varsányi, Hunyadi)** It was astonishing... I - - - - - (-)
(OMH):	"**chudalatos**, hogy az kegyelmed ioszagan nem bekesegesek az en emberim." "It is astonishing that, in your grace's realm, my men are not peaceful."
(DiF):	**Nem sok idő múlván I - - - - - (-) (Tinódi, Sztárai, Ilosvai, Dézsi, etc.)** Not long after... I - - - - - (-)
(OMH):	"**nem sok idö muluán**, ezen Molnárra Feleségéuel edgiüt sok ideigh valo hidegh lölésnek giötrelme szálot." "Not long after, the torment of trembling of cold fell upon the miller and his wife, for a long time."
(DiF):	**- - - - - (-) I az hatalmas Isten (Farkas, Varsányi, Batizi, etc.)** - - - - - (-) I ...the Almighty God
(OMH):	"**A hatalmas Isten** tartsa meg kegyelmedet nagy jó egészségbe'!" "May the Almighty God keep your grace in very good health!"
(DiF):	**Kinek talám mássát ti/tü nem/sem hallottátok (Istvánfi, Ráskai, Tinódi)** Like that you might have never heard.
(OMH):	"soha **mássát nem** láttam, **melynek mássát** szörnyűség **hallani**". (Variation) "I have never seen its like, the like of which is dreadful to hear".

Table 1: Shared examples found in Di Francesco 2005 (DiF) and OMH n.d.

some very different expressions containing the lemma "számlál" ("count") as variations of the same formula.

"Megszámlálásra hagyom..." (Tinódi, *RPHA* 1244)
    "I leave them to be counted"

"Számlálok majd én is..." (Szakmári Fabricius István, *RPHA* 1246)
    "I will also count"

"Megszámlálok egynéhány vitézeket" (*Cantio*, *RPHA* 369)
    "I will count some soldiers"

In fact, some of the formulas identified by Di Francesco are also rather simple and are not specific to poetry either. The examples gathered by Di Francesco often fill precisely one hemistich, consequently they usually have a precise metric function. Nevertheless, they appear to be more typical expressions, or even just frequent collocations, not idiomatic phrases, because their degree of lexical variability is very high. Some of his examples also appear in the Old and Middle Hungarian Corpus of Informal Language Database (OMH n.d.) (Table 1).

We can assume that the level of variation in poetic formulas is much higher than it was supposed to be by Di Francesco. Not only do the repeated words have to be considered, but also their larger context in the line and their synonyms and grammatical variations. To understand the real nature of grammatical and lexical repetitions in the historical songs we used computational tools to detect them in our corpus. By way of this process, we analysed the words in rhyming position as a set of morphemes and aimed to collect the repetitions on different levels: (1) parallel grammatical structures, (2) partly or (3) totally identical lines.

2.1.1 Keywords

In our first experiment we aimed to complete the list of formulas identified by Varjas and Di Francesco by (1) a simple search for keywords (the most significant lexical element of such an expression), (2) for the most frequent word collocations, and (3) for combinations of two lemmata. For example, we found that the words "dobok" and "trombiták" frequently collocated (Figure 1). The lemmata "dob" ("drum") and "trombita" ("trumpet") appeared among the 100 most common lemma collocations (Figure 2).

Both words are very common in the genre, mainly in the descriptions of battles. The sound of these two instruments is a *topos* in these scenes, and we suspected that they might form part of formulaic expressions. However, neither the search for lemmata, nor for word collocations could help us to find a solid, frequently used formula. The word collocation of "dobok" and "trombiták" occurs 15 times in nine texts, while the collocation of the lemmata "dob" and "trombita" occurs in the same line 41 times in 25 different texts. Consequently, the search for the lemmata revealed many more similar expressions than the search for word forms, although the variations of the verses containing them were too high to identify them as occurrences of an epic formula.

2.1.2 Regular Expressions

We also attempted to search for formulas identified by Varjas and Di Francesco, as well as those identified by the members of our group, by using regular expressions. This gave much better results than the simple searches, and significantly augmented the number of findings. The following examples of REGEX queries illustrate the difficulties in the identification of variants of the same expression in this specific corpus:

- `"mikor(on)? .*?jut(á)?nak[,.:]?"`
  "when they arrived to"
  (39 hits against 24 found by Di Francesco)

- `"(t[ié]rd|f[eö]j).*?hajt|hajt.*?(t[ié]rd|f[eö]j)"`
  "to bend their knee or to bow their head"
  (62 examples, formula not examined by Di Francesco)

This method worked in the case of formulaic expressions identified beforehand, and when great circumspection was used to formulate the regular expression, so that it would assist the algorithm in finding all potential variations of a formula. The agglutinative character of the language and the orthographic variety of the corpus would make it too difficult, and it would take very long, to create such search expressions and to verify all similar searches, even with the regular expressions; thus computational rule-based searching methods are confronted with too many morphological variations in the corpus (Table 2).
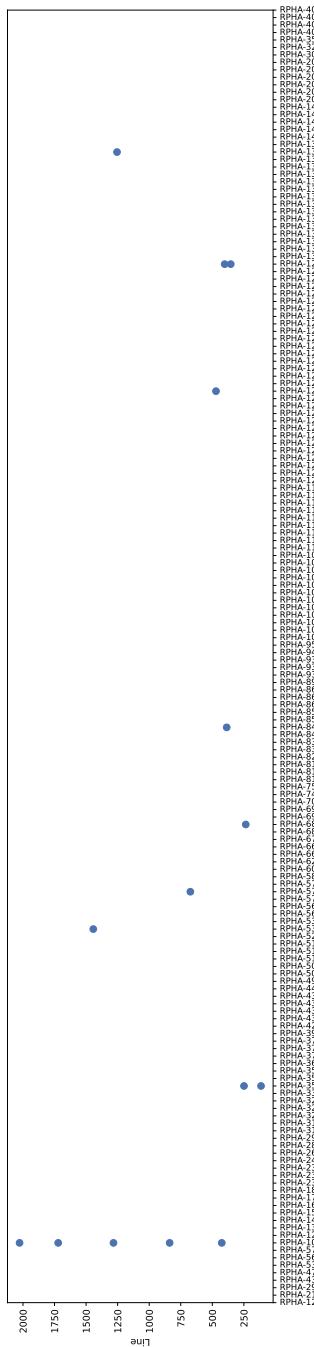
Figure 1: Word collocations "Dob" ("drum") and "Trombita" ("trumpet"). Horizontal axis poems; Vertical axis length (in lines); points word collocations
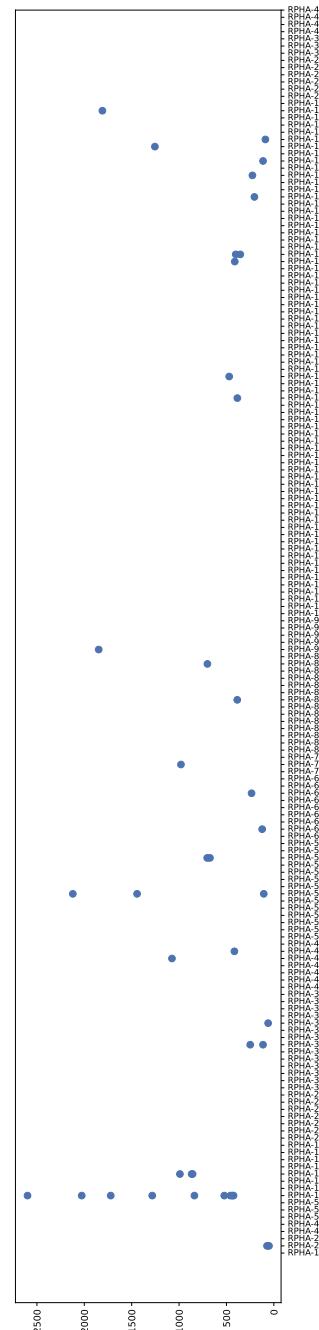

Figure 2: Lemma collocations "Dob" ("drum") and "Trombita" ("trumpet"). Horizontal axis poems; Vertical axis length (in lines); points lemma collocations

RPHA-101	1	Brassó havassára **mikor jutának,**	When they reached the snowy mountains of Brașov
RPHA-1014	1	Pannoniába **mikor be jutának,**	When they reached Pannonia
RPHA-1065	1	Végezetre **mikor** tik az tenger mellé Varanához **jutának,**	Finally, when they reached Varna at the sea
RPHA-1210	1	Cvik várashoz **mikoron** ők **jutának,**	When they reached the city of Cvik
RPHA-1250	1	Panaszolkodással **mikor** béjutának,	When they entered, complaining
RPHA-1285	1	Strázsásokra **mikoron** ők **jutának,**	When they reached the watchmen
RPHA-1286	1	Az vitézek **mikor** közel **jutának,**	When the warriors approached
RPHA-1288	1	Egyiptom felé **mikoron jutának,**	When they reached towards Egypt
RPHA-1328	2	Ide Erdélybe **mikor** béjutának,	When they entered here into Transylvania
		Ide ez országba **mikor jutának,**	When they reached into this country
RPHA-1334	1	Az mezén el-alá **mikoron jutának,**	When they reached up and down the field
RPHA-1340	1	Az Trójában **mikoron** bejutának,	When they entered Troy
RPHA-1355	1	Szalkai mezőre **mikoron jutának,**	When they reached the Szalka field
RPHA-1381	1	Ötödnapra **mikoron** ők **jutának,**	By the fifth day, when they arrived
RPHA-1382	1	Kozári mezőre **mikoron jutának,**	When they reached the Kozár field
RPHA-373	2	Az tengernek szigetéhez **mikoron jutának,**	When they reached the island by the sea
		Rómaságnak várasához **mikoron jutának,**	When they reached the city of Rome

Table 2: REGEX query "mikor(on)? .*?jut(á)?nak[,.:]?"

(1)   Az Olaszországnak egy szegeletiben,   In a corner of Italy,
       [Det|Pro] + [N][Dat] + [N|Pro] + [N][PxS3. Pl=i][Ine]

(2)   Az Vezule hegynek ű kerületiben,   In the vicinity of Mount Vesuvius,
       [N|Pro] + [N][P] + [N][Dat] + [N|Pro][S3] + [?]

(3)   Nagy sok szép városok vadnak ű fektiben,   There lie so many beautiful cities,
       [Adv] + [Q] +[Adj] + [N][Pl] + [V][P3] + [N|Pro][S3] + [N][PxS3=i][Ine]

(4)   És jeles szín népek laknak a mentiben.'   And notable, outstanding people live
                                                   in the surrounding area.
       [C] + [Adj] + [N] + [N][Pl] + [N][Dat] + [Det|Pro] + [N][PxS3=i][Ine]

       (Pál Istvánfi, *RPHA* 318)

Example 2: Grammatical parallelism of the lines identified by emMorphOMH, in a stro-
phe taken from Pál Istvánfi's historic song (*RPHA* 318); the false results are highlighted

2.1.3   POS Tags

We also focused on the variability of grammatical patterns. Specifically, we
measured the entropy of each stanza based on the sequences of the four line-
final POS tags in order to get a picture of the importance of parallel structures in
the creation of the strophe. The morphological analysis was done with the help
of a version of the emMorph analyser specifically designed for the treatment of
Old and Middle Hungarian texts (in the following, emMorphOMH, Váradi et al.
2018; Indig et al. 2019). In this manner, the algorithm prepared by Petr Plecháč
found not only lexical repetitions, but also parallelisms of the grammatical
structure of the subsequent stanza lines (see Example 2 where lines (1) and (2)
have the same structure as lines (3) and (4)).

Despite many corrections and developments, emMorphOMH still does not
function to the standard of our requirements. One of its typical faults occurs
when it aims to categorise the parts of speech; homonyms caused several false
results. For example, in the case of *laknak* [N][Dat] or *laknak* [V][P3], where
the second result would have been correct, and identifiable from context, the
analyser failed to recognise it. Historic morphological forms likewise caused
false results in some virtually identical word structures, even in rhyme position:

       szegeletiben   [N][PxS3.Pl=i][Ine]*,
       kerületiben   [?]*,
       fektiben   [N][PxS3=i][Ine],
       mentiben   [N][PxS3=i][Ine].

In this case only two of four results were correct. This has led us to conclude that
the analyser in its current form, with its relatively high rate of failure (above
6%), is unable to offer a reliable computer-assisted morphological analysis
of the corpus. Further improvements are needed, and we will proceed to
work to improve emMorphOMH so that precise results might be obtained for
grammatical parallelisms. (A larger presentation of the morphological analysis
is to be found in A. Horváth et al. 2023.)

Unfortunately, these manifold attempts have so far failed to show an un-
equivocal result. The formulas we believe to be systematically present, could

not be revealed by using these methods. In terms of the use of formulas, the differences between the poems were not strong enough, and the identification of the most important recurrent lexical elements was not possible. The main reason for the failure of these attempts was the nature of our specific corpus: the orthographic variability of the word forms, the high number of morphological variations for cases and suffixes in 16th century Hungarian, as well as the dialectal differences in the texts.

2.2 Character Bigram: Formulas and Line Sharing

Because of the inconsistent and unreliable results provided by the aforementioned methods, the difficulties of identifying formulas, as well as more generally, to serve our intention of defining the epic formula in its intrinsic variability as it appears in this corpus, we needed a new method. As generally in the texts of our corpus a line corresponds to a clause, it seemed promising to search for repetition on the line level. We decided to try a character bigram search in order to identify the closest lexical parallels of specific lines in the entirety of the corpus. We followed the approach of Maciej Janicki (Janicki et al. 2022) and represented each line as a vector of character bigram frequencies. Cosine distance was then calculated for each pair of lines in the corpus.[5] As we are dealing with poems, a search for parallelisms and repetitions at line level was the most appropriate. This method allowed us to discover a very rich network of intertextuality, as well as some unexpectedly long formulas. We have included punctuation in the comparison, hence the number of perfectly identical lines (cos.dist. $= 0$) is very small: at 52 line pairs. The presence or absence of a line-final period means cos.dist. > 0. After a thorough examination of the results, we decided to investigate the pairs with cos.dist < 0.3. This way, near-identical line pairs of very different lengths were also revealed. These cases suggest that the formulaic style in the epic poetry we have analysed is not in fact strongly meter-dependent.

Our main goal was to identify epic formulas in a more complete and more secure, automatised way than by simply searching for previously detected formulas, word collocations and expressions. Finding even very closely related, (almost) identical lines in the corpus is a bonus (see Section 3.2 for some of these shared lines). The analysis of identical or similar lines also allowed us to propose a typology of formulas.

3 Results

3.1 Internal Repetition

Retaining Di Francesco's distinction between internal and external formulas, we wanted to measure the proportion of almost identical lines in a single poem

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[5] With a corpus consisting of nearly 100,000 lines, this meant several billion combinations, which means the task went far beyond the capacity of a standard PC. We are very grateful to the Institute of Czech National Corpus for kindly allowing us to use their servers for this purpose.

and in this way detect the internal formulas that could have aided the creation and the memorisation of the poem, repetition of the (almost) identical lines at different points in the text giving a rhythm to the poem.

We have several tables categorising the degree of line similarity. The absolute and the relative values (Table 3, 4) of the repeated lines have been collected and represented. The more lines of the poem are identical (to a certain degree), the higher the relative value. According to the decreasing level of correspondence in the lines there were of course more and more similar lines within the poems. However, six of the first ten positions on the lists were repeatedly held by the same poems.

These tables show the first five poems in a relatively stable position. Allowing for a greater degree of difference between the lines does not radically change the position of the poems in the ranking: apparently the repetition of lines with minor or major differences characterises the texts in the same way. The absolute number of repetitions naturally depends on the length of the poems. In each table Antal Zombori's poem on the struggles of the tribes of Israel, based on the Bible, is the leader. Zombori's poem contains 2,051 lines in 342 stanzas, which allows a very high number of internal repetitions. While the *Cantio* is the 5th in the list with 12 very similar lines at level 0.1, it disappears from the top ten at level 0.2, and only reaches 11th position, with 17 identical lines. This is due to its relatively short length. The statistics change significantly if we look at the ratio of the total number of lines to the number of repeated lines. The strongest value of the relative number of the closest repetition of lines (0.1) is by far that of the *Cantio* (0.0689) followed at a high distance by another anonymous poem, *Rusztán császár históriája* ("A History of Emperor Rusztán", *RPHA* 373 by Anonymous of Drávamellék, 0.0287). This pivotal position is held by the *Cantio* if the distance is augmented to 0.15 (value 0.0804), but the poem drops to second position at the distance 0.2 (value 0.0977), and fourth when we set the level at 0.3, with a value of 0.1322.

The first two rankings clearly show the specific character of the *Cantio* in the corpus. This poem contains by far the highest number of lines of the greatest degree of similarity (at distance 0.1 and 0.15). When a higher level of difference is allowed, the *Cantio* falls somewhat back in the ranking. At 0.2 it is still very close to *A babiloniabeli Bél és sárkány bálvány istenekről való história* ("History of the Babylonian Idolic Gods Bel and Dragon", *RPHA* 1190), which is a fragmentary paraphrase of two episodes of the biblical Book of Daniel. As the latter part of this poem is missing, we cannot judge if the lost part contained as many repetitions as the first part, but it seems likely that the pattern and nature of repetition remained consistent throughout the poem. This poem has very loose versification, the meter is not regular, rhyming is accidental, so the main pattern that consolidates its structure is the repetition of line-long lexical elements: mainly parts of a dialogue, either introductions, such as "Szóla az király Dánielnek" ("The king said to Daniel") and its pair "Szóla Dániel az királynak" ("Daniel said to the king"), or similar replies, such as "Meghallgassad felséges király" ("Listen to this, mighty king").

All these patterns, the rudimentary versification of the piece, its archaic character, the way it reconstructs dialogues between the king, Daniel and the

Absolute value	cos.dist. ≤ 0.1	cos.dist. ≤ 0.15	cos.dist. ≤ 0.2	cos.dist. ≤ 0.25	cos.dist. ≤ 0.3
1.	Zombori-1255 46	Zombori-1255 75	Zombori-1255 108	Zombori-1255 198	Zombori-1255 393
2.	Hunyadi-538 31	Hunyadi-538 51	Hunyadi-538 88	Hunyadi-538 158	Hunyadi-538 343
3.	Drávamelléki-373 26	Drávamelléki-373 33	Valkai-1328 68	Valkai-1328 121	Valkai-1328 227
4.	Valkai-1328 15	Valkai-1328 32	Drávamelléki-373 49	Drávamelléki-373 68	Drávamelléki-373 113
5.	Ilosvai-692 12	Ilosvai-692 14	Ilosvai-692 34	Ilosvai-692 61	Ilosvai-692 112
6.	Anonymous-369 11	Anonymous-369 14	Görcsöni-101 28	Görcsöni-101 49	Cserényi-1493 111
7.	Sztárai-1016 11	Sztárai-1016 14	Sztárai-1016 26	Cserényi-1493 46	Görcsöni-101 98
8.	Batizi-124 10	Sztárai-1015 13	Sztárai-1015 20	Tinódi-1381 38	Tinódi-1381 79
9.	Tinódi-1381 9	Batizi-124 12	Cserényi-1493 19	Sztárai-1016 31	Sztárai-1016 68
10.	Sztárai-1015 8	Cserényi-1493 10	Tinódi-1381 18	Sztárai-1015 18	Szebeni-560 53

Table 3: List of top poems by absolute number of near-identical lines using different cosine similarity thresholds of bigram vectors. Zombori-1255 refers to Antal Zombori's poem, reference number in the *RPHA*: 1255. The numbers after the *RPHA* numbers give the occurrences of the almost identically repeated lines.

Relative values	cos.dist. ≤ 0.1	cos.dist. ≤ 0.15	cos.dist. ≤ 0.2	cos.dist. ≤ 0.25	cos.dist. ≤ 0.3
1.	ANONYMOUS-369 .06897	ANONYMOUS-369 .08046	ANONYMOUS-1190 .10476	ANONYMOUS-1190 .14286	Zombori-1255 .19161
2.	Drávamelléki-373 .02876	Zombori-1255 .03657	ANONYMOUS-369 .09770	ANONYMOUS-369 .10920	ANONYMOUS-1190 .17143
3.	Batizi-1192 .02778	Drávamelléki-373 .03650	Drávamelléki-373 .05420	Zombori-1255 .09654	Hunyadi-538 .14913
4.	ANONYMOUS-4018 .02609	ANONYMOUS-1190 .02857	Zombori-1255 .05266	Drávamelléki-373 .07522	ANONYMOUS-369 .13218
5.	Zombori-1255 .02243	ANONYMOUS-570 .02825	ANONYMOUS-570 .04520	Hunyadi-538 .06870	Drávamelléki-373 .12500
6.	Szkhárosi-576 .02083	Batizi-1192 .02778	Hunyadi-538 .03826	ANONYMOUS-570 .06780	ANONYMOUS-570 .08475
7.	Csáti-376 .01911	ANONYMOUS-4018 .02609	Sarlóközi-840 .03652	Batizi-1192 .05093	Valkai-1328 .06998
8.	ANONYMOUS-1190 .01905	Csáti-376 .02548	Batizi-1192 .03241	Batizi-124 .04787	Sztárai-1015 .06860
9.	Batizi-124 .01773	Sarlóközi-8400 .02528	Csáti-376 .03185	Sztárai-1015 .04573	Fekete-1284 .06566
10.	Sarlóközi-840 .01685	Hunyadi-538 .02217	Sztárai-1015 .03049	Sarlóközi-840 .04494	Batizi-1192 .06481

Table 4: List of top poems by relative number of near-identical lines using different cosine similarity thresholds of bigram vectors. The numbers after the codes show the proportion of nearly identical lines relative to the whole poem.

priests, perfectly explain the remarkably high rate of repetition in the biblical paraphrase. It is interesting, however, that at the distance of 0.3 two other, very long, poems precede the *Cantio* in the ranking: Zombori's biblical historical song (*RPHA* 1255), and Ferenc Hunyadi's poem on the *Trója históriája* ("Siege of Troy", *RPHA* 538). In Zombori's poem the rate is so high that it means that almost every fifth line has at least one counterpart elsewhere in the poem (0.1916). We cannot fail to bear in mind that the distance of 0.3 is too high for only real pairs to be noticed; it is possible that a distance of 0.3 allows us to assimilate lines that would not be as akin to each other were they not calculated by the algorithm. Nevertheless, the next value is much smaller: *A babilóniabeli Bél…*, *RPHA* 1190: 0.1714, and the differences between the poems, and even the authors, are very clear. The value of Zombori's poem is 1.4496 times bigger than that of the *Cantio*. This might also be explained by the fact that we considered that Zombori's poem has some non-rhyming lines, and is cut into two long lines (the metrical structure is 14(7,7), 14(7,7), 21(7,7,7), 21(7,7,7) (rhyming aaaa) in the *RPHA*, but 14 (7,7), 14 (7,7), 14 (7,7), 7, 14 (7,7), 7 in our analysis (rhyming aaxaxa, x being a blind rhyme). If long lines of 21 syllables would have been compared, the number of almost identical lines would probably have been limited. If the seven-syllable lines were to be considered as hemistichs, then it could be very interesting to examine the formulaic repetitions at the hemistich level and not the line level, as we are currently doing. The fact that Zombori and Hunyadi pass over the anonymous author of the *Cantio* in reuse of lines shows that our assumption that the *Cantio* has by far the strongest oral features in the corpus, must be somewhat dubious. The high rate of internal repetition suggests a special poetic and aesthetic conception for these two long epic poems, i.e. a stronger relationship to orality or at least to a more archaic poetic practice of composing.

The *Cantio* is thoroughly structured by repetition. The repetitions concern the dialogues and the action, the descriptions of battles and cover plenty of narrative *topoi*. In addition the almost identical word for word repetitions throughout the poem offer a strong and compact unity. The length of 57 stanzas does not permit the whole poem to consist solely of lines with counterparts: to deal with all of the topics the author needs a larger variation of lines as he advances in preparation for the battles and military acts; or at least, the level of variability becomes too high to be perceived by the algorithm. More than two consecutive lines occurring twice in the text is exceptional.

One of the most important results of the comparison is to show that the *Cantio* is not the only one of its kind, with its high density of internal repetition and formulas. A repetition value higher than 0.1 at the distance rate 0.3 probably indicates that traditional (orality-based) versification technique had a strong effect. As is well known, repetition of longer lexical units, sometimes of entire lines, was a mnemotechnical device that could facilitate the composition and the memorisation of the texts. Alongside the *Cantio*, there are five poems above that limit: Zombori's (*RPHA* 1255), the paraphrase of the Book of Daniel (*RPHA* 1190), Hunyadi's text (*RPHA* 538), and the paraphrase of the *Rusztán császár históriája* ("A History of Emperor Rusztán") from the *Gesta romanorum*, by Anonymous of Drávamellék (*RPHA* 373).

It is important to state that almost every subgenre is represented among these poems: biblical paraphrase, contemporary report song of a military event, epic song based on a plot taken from the Bible, and rewritings of medieval Latin narrative texts. Moreover, the poetic technique here described relates not only to the genre of the report song as an occasionally performed poem, but also as one that is supposed to be spontaneous, reflecting on very recent events.

Further investigation is needed to establish if other poetic and metric patterns join these five poems in a way that makes them more closely linked than the rest of the corpus. Nevertheless, in a wider context, we can observe that the ten poems with the highest ratio of internal formulas either have no acrostic (highlighted in blue), or contain only the name of the author in the first letters of the first stanzas (highlighted in green) (Table 5).

The exception here is again Zombori's long poem with a complicated dedication in Latin forming an acrostic. The song *Ím, megromlottál, ó, jó keresztyénség* ("That's how you went wrong, good Christianity", *RPHA* 576) by András Szkhárosi Horvát also has a very advanced place in the ranking at 0.1 (6th, with 0.020833), but it is probably due to the sermon-like character of the poem, which is quite far distanced from that of the other historical songs. This rather short composition applies repetitions of lines to achieve a didactic purpose, and disappears from the top ten quite promptly, at a distance of 0.15.

Table 6 shows the bottom of the lists. A number of poems have no line-long repetitions at all.

Unsurprisingly this statistic also reveals that more distant similar lines are more frequent in the corpus than the close variants, and that only 20 poems have no line repetition at the highest allowed distance. These 20 exceptions include eight poems by Miklós Bogáti Fazakas and three by Sebestyén Tinódi, with some other poets present with only one composition in that list. As all the 15 poems by Bogáti Fazakas present in the list of historical songs are much closer to the bottom of the list than to the top, in his case we can really notice the refusal of a compositional technique based on line-long repetition. His poem with the highest ranking is 82nd in the list at a distance of 0.3. This poem is not in fact a traditional historical poem, but a paraphrase of the Song of Songs from the Old Testament. It is much less epic in character than Bogáti's other poems; its repetitive lines are much more likely to be a result of the structural repetitions of the biblical original being adapted by him, than to be evidence of his personal style, or an attempt to imitate the formulaic style of his contemporaries and predecessors.

3.2   Borrowings, Imitations, Intertextuality: External or Shared Formulas

Analysis of the internal formulas has shown something about the individual composition techniques of the poets. The identification of external formulas in the form of the common, almost identical, lines in several poems, gives us another insight into their poetic devices: the sharing of a high number of textual elements could reveal strong intertextual connections, or a common stock of line-long formulas. Five-thousand-seven-hundred-and-ninety-eight very similar (below 0.3 distance) line pairs have been detected in the corpus

Relative values	cos.dist. ≤ 0.1	cos.dist. ≤ 0.15	cos.dist. ≤ 0.2	cos.dist. ≤ 0.25	cos.dist. ≤ 0.3
1.	ANONYMOUS-369 .06897	ANONYMOUS-369 .08046	ANONYMOUS-1190 .10476	ANONYMOUS-1190 .14286	Zombori-1255 .19161
2.	Drávamelléki-373 .02876	Zombori-1255 .03657	ANONYMOUS-369 .09770	ANONYMOUS-369 .10920	ANONYMOUS-1190 .17143
3.	Batizi-1192 .02778	Drávamelléki-373 .03650	Drávamelléki-373 .05420	Zombori-1255 .09654	Hunyadi-538 .14913
4.	ANONYMOUS-4018 .02609	ANONYMOUS-1190 .02857	Zombori-1255 .05266	Drávamelléki-373 .07522	ANONYMOUS-369 .13218
5.	Zombori-1255 .02243	ANONYMOUS-570 .02825	ANONYMOUS-570 .04520	Hunyadi-538 .06870	Drávamelléki-373 .12500
6.	Szkhárosi-576 .02083	Batizi-1192 .02778	Hunyadi-538 .03826	ANONYMOUS-570 .06780	ANONYMOUS-570 .08475
7.	Csáti-376 .01911	ANONYMOUS-4018 .02609	Sarlóközi-840 .03652	Batizi-1192 .05093	Valkai-1328 .06998
8.	ANONYMOUS-1190 .01905	Csáti-376 .02548	Batizi-1192 .03241	Batizi-124 .04787	Sztárai-1015 .06860
9.	Batizi-124 .01773	Sarlóközi-840 .02528	Csáti-376 .03185	Sztárai-1015 .04573	Fekete-1284 .06566
10.	Sarlóközi-840 .01685	Hunyadi-538 .02217	Sztárai-1015 .03049	Sarlóközi-840 .04494	Batizi-1192 .06481

Table 5: List of top poems by relative number of near-identical lines using different cosine similarity thresholds of bigram vectors, colour-coded by the presence of acrostic. The numbers after the codes show the proportion of nearly identical repeated lines relative to the whole poem. Blue: poems without acrostic. Green: poems with the author's name as an acrostic. Orange: poems with longer acrostic.

Level	≤ 0.1	≤ 0.15	≤ 0.2	≤ 0.25	≤ 0.3
Number of poems with 0 repetitions	89	65	47	32	20

Table 6: Number of poems with no line-long repetitions

using our method. Out of the 98,503 lines of the corpus 6,727 different verses were present at least once in the parallels: almost seven percent (6.83%) are involved in the intertextual sharing.

Figure 3 shows the closest relationships between the texts. It indicates that a very small number of poems among the surviving historical songs share almost identical lines (96 nodes and 121 weighted edges). Tinódi and Valkai are present with the most poems and connections in the graphs. Increasing the value to 0.2 offers a much more complex network (Figure 4). At that point several pairs appear that share lines between each other but not with the central network. When augmenting the potential distance of the lines, or including less similar lines, if you prefer, some of these couples' relationships become stronger, while others disappear off the graph as the number of their common lines do not attain the necessary level (one similar line is required for a pair to be included in the graph at the distance 0.1, three similar lines are required for a pair to be included in the graph at the distance 0.2, eight similar lines are required for a pair to be included in the graph at the distance 0.3) (Figure 5). In some cases, we might explain these pairs as having a common author, or eventually as having a common topic.

The more complex graphs above the value of 0.2 show the poem *Genealogia historica regum* ("A historic genealogy of the kings", *RPHA* 1328) by András Valkai, a chronicle of Hungarian kings, in a very strong position. It shares many lines not only with other poems by Valkai, but also with Cserényi (*RPHA* 1493), Tinódi (*RPHA* 867), and Hunyadi (*RPHA* 538). Of course, the high number of repeated lines is not independent of the length of these poems as the four texts have respectively 811, 784, 297, and 575 stanzas and are some of the largest compositions in the corpus. However, the thematic closeness of these poems is also evident as all four are chronicles of older periods of history, three of Hungary and one of Persia.

Within the framework of this article, we cannot present all the parallelisms of the texts and all the possible conclusions of line sharing. In the next section, we would like to present some specific cases when line sharing might be explained in different ways.

3.2.1   Authorship

We observed in several cases a very strong resemblance between texts by the same authors. Tinódi's 22 poems are present in the corpus of parallel lines in 888 pairs, and 400 of his lines are coupled with lines from his other poems. András Valkai has only five historical songs, although they contain 474 parallel lines, which is a very high number, assuring him a central position in the network.
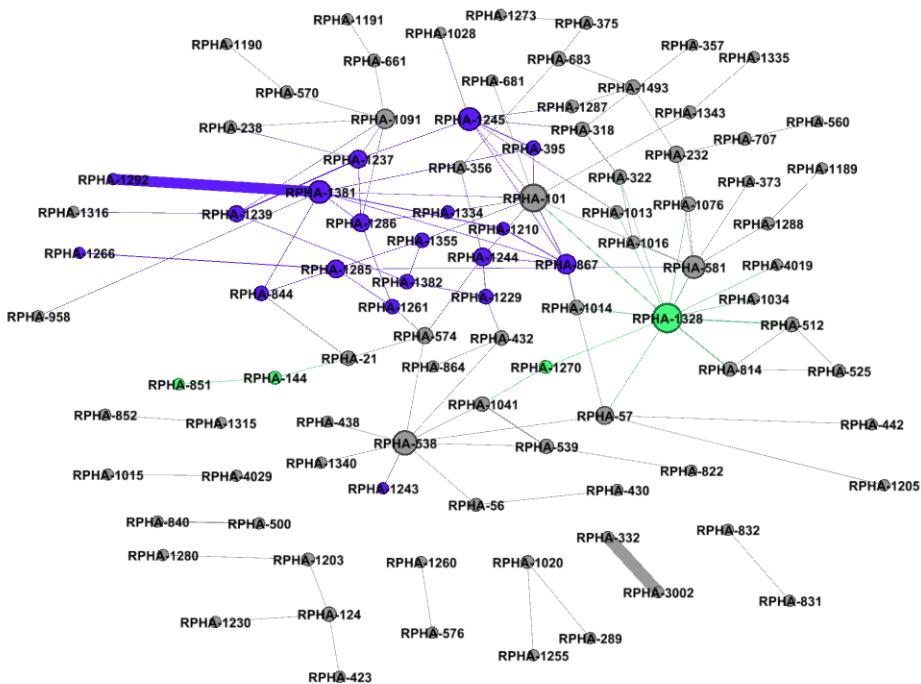
Figure 3: Network of Hungarian historical songs connected by at least one shared line. Nodes represent individual poems; edges indicate line-sharing between poems at cosine distance 0.1. Blue: poems by Tinódi. Green: poems by Valkai.
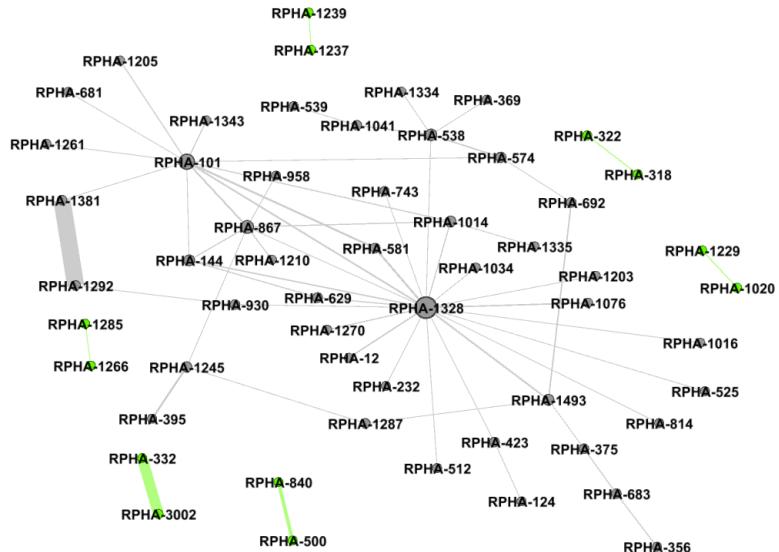
Figure 4: Network of Hungarian historical songs connected by shared lines. Nodes represent individual poems; edges indicate at least three shared lines between poems at cosine distance 0.2. Green: single pairs.
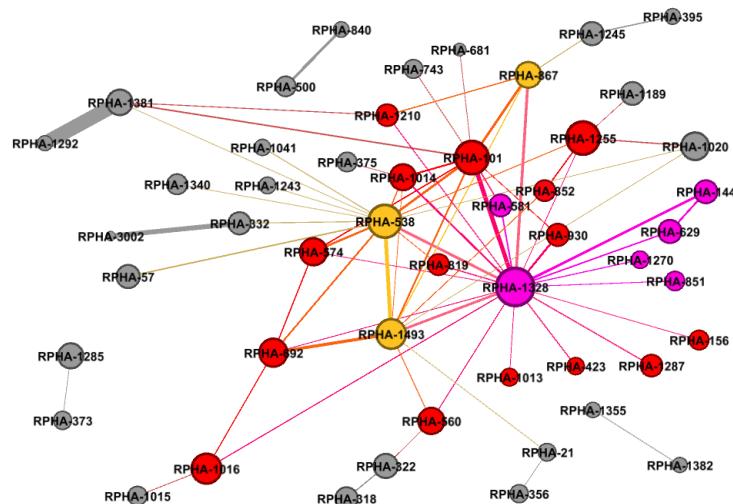
Figure 5: Network of Hungarian historical songs connected by shared lines. Nodes represent individual poems; edges indicate at least eight shared lines between poems at cosine distance 0.3. Pink: texts by Valkai; Red: adjacent to Valkai's *Genealogia historica regum* (*RPHA* 1328); Yellow: poems by Cserényi (*RPHA* 1493), Tinódi (*RPHA* 867), and Hunyadi (*RPHA* 538).

In two cases the number of identical lines is especially high, although this is easy to explain. In the first case one poem in our corpus, the lamentation of Aeneas (*RPHA* 3002), circulated as an independent text, is part of another poem, Huszti's paraphrase of the *Aeneid* (*RPHA* 332): in this case the number of almost identical lines is of course equal to the lines in the excerpt (40). All variations are only orthographic and are due to the vicissitudes of contemporary textual transmission. The other case concerns Tinódi. With the level set to 0.15, the strongest connection is seen in the case of two poems by Tinódi, both dedicated to the siege of Eger. The earliest poem (*RPHA* 1381) was the source of the summarised version, composed somewhat later (*RPHA* 1292). Tinódi borrowed a lot from his own poem, so it is not surprising at all that the two compositions share the most lines (113) at level 0.3.

3.2.2   Genre or Editor?

Two love stories or romances in the corpus, Gáspár Ráskai's 1552 *Vitéz Franciskó históriája* ("A history of the knight Franciskó", *RPHA* 322) and Pál Istvánfi's 1539 poetic translation of the 100th novella of Boccaccio's *Decameron* (*RPHA* 318), share an equally high number of lines (0.1: 2 lines, 0.15: 2, 0.2: 4, 0.25: 7, 0.3: 13). Some lines are so similar, that they could lead one to believe the two texts have the same author, yet we know that this is not the case. The two explanations are either that Ráskai knew the work of his predecessor and chose to borrow some lines from it, or that a radical intervention took place on the part of the first publisher of both, András Komlósi, who printed these songs in the same year, 1572, in Debrecen. The tune given for Istvánfi's poem in the edition is that of Ráskai and thus they shared the melody. The following expressions are very similar in the two poems (Table 7).

3.2.3   Traces of the Oral Epic Tradition?

As we mentioned at the beginning of the article, several 15 and 16th century authors claim that Hungarians used to sing songs about the deeds of their ancestors. In the corpus of historical songs some poems are dedicated to old Hungarian or even Hun history. It was interesting to investigate whether they have some shared formulas that could reflect a common background of oral composition. In fact, we found three poems (Valkai *RPHA* 1328, Gosárvári *RPHA* 1014, Görcsöni *RPHA* 101) on this topic that share some surprisingly similar lines, and two parallels that are formulated in such a similar way that they might come from an earlier common source. Görcsöni's poem *Mátyás király históriája*, ("A history of king Mathias") has some parallels with the two others, although they might be explained by other reasons, as the similarity is somewhat more superficial, but Valkai and Gosárvári both tell the story, using similar formulas, of the death of the Hun king Attila, highlighting his old age:

> "Százhuszonnégy esztendős korba vala" (Valkai *RPHA* 1328)
> "Százhuszonnégy esztendős korban vala" (Gosárvári *RPHA* 1014)
>   "He was 124 years old"

Ráskai	Istvánfi
Kinek talám mását tü nem hallottátok; Something like that perhaps you have not heard of;	Kinek talám mását ti nem hallottátok, Something like that perhaps you have not heard of,
Nem hiszek ég alatt oly nyomorult embert, I do not believe there is such a wretched man under heaven,	Nem hiszek én mostan ég alatt oly embert, I do not believe there is such a man under heaven,
Minden múlatságát hátrahagyta vala, He had left behind all his pleasures,	Egyéb múlatságát hátra hagyta vala. He had left behind all other pleasures.
Ez vitéz az asszont csak szemlöli vala , This knight only looked at that lady,	Az asszont az Volter csak szemléli vala, Volter only looked at the lady,
Az vénasszony ebben nem resten jár vala, The old woman was not idle in this,	Az szolga nem resten ebben eljárt vala, The servant was not idle in this,
Róla sokat akkor ő nem gondolt vala, At that time he thought little of her,	Nem sokat ő azon gondolkodott vala, He did not think much about it,
Keserűségében csak meg nem holt vala. In his bitterness he almost died.	Ű nagy örömében csak meg nem holt vala, In his great joy, he almost died,
Abban egy vén jámbor akkor lakik vala, At that time, an old devout man lived there,	Az vén jámbor akkor kiballagott vala. The old devout man then walked away.
Ebben haladékot semmit nem halaszta, He delayed nothing for any postponement,	Ebben haladékot semmit nem kívánunk, We wish no delay in this,
Atyjának , anyjának öröme lött vala, She brought joy to her father and mother,	Atyjának, barátnak nagy öröme vala. He brought great joy to his father and the friar.
Nagy szép beszédekkel úgy kérdezi vala . He asked with very beautiful words.	Nagy szép beszédekkel urának szólt vala, With very beautiful words, he spoke to his lord,
Ő nagy örömében csak meg nem holt vala, In his great joy he nearly died.	Ű nagy örömében csak meg nem holt vala, In his great joy, he nearly died.

Table 7: Almost identical lines in a song by Gáspár Ráskai (*RPHA* 322) and Pál Istvánfi (*RPHA* 318). The words in blue are identical; the words in green are dialectal variants of the same expression; the words in pink contain the same lemmas; the words in orange are the same word groups with a different word order

They also tell the story of the German hero Dietrich, who survived being shot in the forehead by a Hun Hungarian arrow:

> "Homlokában Rómába vitte vala" (Valkai *RPHA* 1328)
> "Homlokában Romában vitte vala" (Gosárvári *RPHA* 1014)[6]
>   "He took it to Rome in his forehead"

It is worth taking into consideration that these poems tell the ancient story of the Hungarians, and it is possible that these shared lines are borrowed from some lost poems (or material?) dealing with that topic. Nevertheless, even in this case we must be prudent: both Valkai's (1576) and Gosárvári's (1579) texts were first edited in Kolozsvár (Cluj), by the same publisher. For this reason, we cannot exclude the printer fashioning both texts with identical lines at that point.

3.2.4   Topic Dependence

In some cases, the use of the near identical lines is due also to their discussing the same topic. In some cases, the high number of shared lines between two poems might lead to a new authorial attribution.

Anonymous of Sarlóköz (*RPHA* 840) wrote a poem of circa 89 stanzas on the Last Judgment in 1552. It shares 25 similar lines with a 202 stanza-long poem attributed to Péter Bornemissza on the same topic, composed in or before 1582. We consider this a rather high number. Péter Dobai also wrote a poem on the Apocalypse (*RPHA* 12), although it has less in common with the two others. The 47 stanza-long surviving fragment shares only five lines with *RPHA* 840, and only one with *RPHA* 500. This is the earliest poem on the topic, contained in the same edition as Péter Bornemissza's, so Bornemissza must have known it. Still, it seems clear that despite the identical topic, not all three poems share lines, and not in the same proportion, although the hypothetical discovery of the lost part of Dobai's poem could alter this data. We might conclude from this that sharing a topic did not oblige the authors to share lines too.

3.3   Thematic Grouping of Formulas

The analysis of parallel or shared lines allowed us to have an overview of topics that are frequently associated with formulaic expressions. Some of these recurrent elements were not surprising at all, while some others could be observed only thanks to our approach. The identity of a structural function or an identical narrative element, in many cases, explains the appearance of almost identical formulas in different poems.

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[6]   The lines in context: "Csak kevesen az Deitrich elszalada, /Homlokba nyíllal azt is lőtték vala, /Homlokában Rómába vitte vala, /Azért haláltalannak híják vala." (*RPHA* 1328) ("Shortly after Deithrich ran away, / He was shot by an arrow in his forehead, / He took it to Rome in his forehead, / That's why he is called immortal.") "Homlokában nyilat belőtték vala, / Deitrich hadnagy fejét találták vala, / Homlokában Romában vitte vala, / Macrin viadalban elveszett vala." (*RPHA* 1014) ("He was shot by an arrow in his forehead, / Captain Deitrich was shot in his head, / He took it to Rome in his forehead, / Macrin was killed in a battle.'")

3.3.1   Structural Function: Composition and Dating

The opening and closing sections of the poems contain many similar expressions. The authors frequently describe the conditions of composition in the last colophon-strophe of the poem. The name of the author, a verb meaning roughly "to write" or "to compose", and an object are the obligatory elements of such a formula.

Examples:

> "Ezt énekbe szerzé az Batízi András" (*RPHA* 1192)
>> "This was composed in song by András Batízi"

> "Tinódi Sebestyén írá könyvében" (*RPHA* 1229)
>> "Sebestyén Tinódi wrote this in his book"

> "Nem jelenté meg nevét ő ezekben" (*RPHA* 1270)
>> "He didn't announce his name in these"

Many poems contain dates: either historical ones, or the year of the composition of the poem (these in the colophon). No less than 193 different lines begin with "Ezer" (One thousand) and the huge majority of the lines contain a date.

Examples:

> "Ezernégyszáz írtak az negyvenötben" (*RPHA* 101)
>> "The date was one-thousand-four-hundred-and-forty-five"

> "Ezerötszázban és ím az negyvennégyben" (*RPHA* 1230)
>> "In one-thousand-five-hundred-and-forty-four"

> "Ezerötszáz után és az hatvannyolcban" (*RPHA* 1254)
>> "After one-thousand-five-hundred-and-sixty-eight"

3.3.2   Identical Motifs

Some acts or gestures are expressed with very similar expressions in our corpus. It is highly probable that they were also used in everyday communication in a very similar way. The expression "hálát ad" ("to give thanks") is surprisingly frequent on the list, with many different actors and recipients of the thanks: God, a king, a lady, a lord, among others.

Examples:

> "Oláh az Istennek nagy hálát ada" (*RPHA* 101)
>> "The Wlach gave great thanks to God"

> "Nagy hálákat jóvoltáért Istennek adjanak" (*RPHA* 1482)
>> "For his goodness they gave great thanks to God"

> "Ez nyereségön nagy hálát adának" (*RPHA* 1244)
>> "For this gain they gave great thanks"

Several scenes of meeting are described in the corpus that give occasion for a character to express their high esteem to another person: "térdet/fejet hajt" ("to bend their knee or to bow their head"). This act is also really frequent in the corpus.

Examples:

"Tirdet, fejet hajtván, söveget hányának" (*RPHA* 1254)
"They bent their knee, bowed their head, launched their hats"

"Térdet, fejet Hectornak hajtnak vala" (*RPHA* 538)
"They bent their knee and bowed their heads for Hector"

"Ez egy úrnak térdet, fejet hajtan" (*RPHA* 1189)
"They bent their knee and bowed their heads for this lord"

As there are a number of military acts, wars, battles and sieges narrated in the corpus, it is not surprising that a high number of them were expressed in a stereotypical way. In this case we cannot speak of a single formula, but much more of a group of formulas related to different moments in the confrontation: preparation (sounds of drums, trumpets, or even cannons), engagement, battle, loss and victory. There are many examples; those here listed are more representative than exhaustive.

Examples:

"Sok dob, trombita erősen harsoga" (*RPHA* 629)
"Many drums and trumpets sounded strongly"

"Trombitát fútata, dobot üttete" (*RPHA* 144)
"He made the trumpets sound, and the drums beat"

"Sípok, dobok, trombiták szünögtenek" (*RPHA* 1381)
"Whistles, drums and trumpets are sounding"

We cannot claim that all the topics of the identified formulas have been described in this list, nor that all the occurrences of the aforementioned formulas have been found, because our method allowed us to identify only the closest parallels. Nevertheless, this is a very solid starting point for the definition of the epic formulas found in historic songs.

3.4 Definition of the Line-Long Formulas in the Historical Songs: The Limits of Variation

The above-mentioned two eminent scholars, Béla Varjas and Amedeo di Francesco described the Hungarian historical song as a genre full of formulas and repetitions. But they could not offer a precise definition of the epic formula, and they had no tools to measure and to show the real impact of this poetic tool on the genre. Some of the formulas they selected are perhaps not really "poetic": they are common, basic verbal locutions, frequent also in everyday communication, and in their form too flexible to be considered as enrooted formulaic expressions, way less constrained than the above-mentioned expressions of gratitude or warlike acts (Section 3.3.2).

As based on our previous examinations we could quite clearly identify formulas that were the length of a line of verse, we are proposing a somewhat different conception and definition of the formulas than previous scholarship. It seems to us that it is impossible to give a concise definition of the formula based on shorter expressions, or any other recurrent elements of 16th century Hungarian poetry.

According to our definition the formula:

- stays within the confines of a single line (with exceedingly few exceptions),

- contains at least three core grammatical elements, and some optional or accidental, not obligatory ones (the numbers of a date do belong to the same grammatical category, so dating do not necessarily fulfil these requirements),

- allows lexical variability also on the level of the core elements, but the variations are always synonyms or belong to the same semantic field (so the number of variations is rather limited in the case of these core elements).

These points are different from Di Francesco's categories, consequently some of his formula samples do not fulfil these criteria, being too short or too trivial. Concomitantly, we keep Di Francesco's definition of the distinction between the functions of the internal and external formulas. The scope of this paper does not extend to analysing the difference in their functionalities, although a further paper will expand on these.

The formulaic style reflects a special compositional technique. It can be identified in a small portion of the poems in our corpus, where the main poetic device of the text is the reuse and variation of some expressions or lines in the same composition. The anonymous *Cantio de militibus pulchra* and *A History of Emperor Rusztán* are the most evident examples of this technique that survive.

In the formulaic style:

- the syntactic structures of the lines identified as formulaic repetitions are parallel, either identical or very similar,

- while the parallelism of the syntactic structures of the formulaic lines remains stable, some morphological variation, such as in number, flection, verbal tense, or verbal prefixes, of the same lexical elements, is quite common. The function words and other optional elements might change,

- rhyme position influences the formula. If the rhyme-word is the same in two similar lines, their formulaic character appears to be stronger. In the same way, identical beginnings to lines strengthen the formulaic character of the composition.

3.4.1   Example: A Shared Formula in All Its Forms

Table 8 illustrates the concept of the formula with all occurrences of the expression. The example chosen is "valamilyen viadalt tartani" which means "to hold some kind of tourney" but has a more general meaning of "to fight or to joust somehow".

As we can see, the three obligatory elements of the formula follow each other in the same order. An adjective marking the noun "viadal" (meaning "battle", here as an object), and a verb are present in each line, except in 16 and 20, where an adverb replaces the adjective. Some additional elements might appear at different points in the line, but this core of the formula is always

	Original	RPHA	English translation
1.	Nagy erős viadalt ők ott tevének,	1266	They fought a great and strong battle there
2.	Nagy erős viadalt vélek tartott vala.	1243	They held a great and strong battle with them
3.	Nagy erős viadalt mindkét fél tartának,	1334	Both sides held a great and strong battle
4.	Nagy erős viadalt mindkét fél tarta,	0101	Both sides held a great and strong battle
5.	Csuda nagy viadalt velök tartának,	1335	They held a marvellous great battle with them
6.	Az törésön ők nagy viadalt tartának,	1245	They held a great battle at the breach
7.	Csuda erős viadalt vélök tarta,	1335	He held a marvellous strong battle with them
8.	Nagy erős viadalt vélek tartának,	0369	They held a great and strong battle with them
9.	Nagy erős viadalt akkor es tartának,	1334	They held a great and strong battle at that time again
10.	Nagy erős viadalt akkoron tartának,	1334	They held a great and strong battle at that time
11.	Új viadalt Cignussal kezdett vala	0538	He began a new battle with Cignus
12.	Nagy erős viadalt esmét tartának,	0538	They held a great and strong battle again
13.	Rettenetes viadalt indítának,	0538	They launched a dreadful battle
14.	Erős viadalt pogánokkal tarta,	0144	He held a strong battle with the pagans
15.	Mert erős viadalt ők ott tartának,	0867	For they held a strong battle there
16.	Vízárokból viadalt es tartottak,	0245	They held a battle also from the water trenches
17.	Nagy viadalt velek törletének.	0245	They fought a great battle with them
18.	Nagy erős viadalt hajdúkkal kezdének,	1334	They began a great and strong battle with the hajdús
19.	Szekér környül nagy viadalt szörzének,	0867	They waged a great battle around the chariot
20.	Az szekér mellett viadalt tart vala,	0867	He held a battle by the chariot
21.	Törökekkel ott nagy viadalt kezde,	0867	He began a great battle with the Turks there
22.	Hogy végső viadalt ők mívelnének.	1014	That they would carry out a final battle
23.	Nagy viadalt egymással tartnak, vesznek,	1014	They hold and take a great battle with each other
24.	Bátor szívvel vélök nagy viadalt tőn;	1335	With a brave heart he waged a great battle with them
25.	Új viadalt Hectorral kezdett vala.	0538	He began a new battle with Hector
26.	Mindkétfelől erős viadalt tőnek,	1261	Both sides fought a strong battle
27.	Az pórokkal nagy viadalt ő tarta,	0395	He held a great battle with the peasants
28.	Az víz mellett erős viadalt tévének,	0683	They fought a strong battle by the water
29.	Ott nagy erős viadalt Israelnek fiai (ellenséggel tartanak.	1255	There, the sons of Israel [fought] a great and strong battle [with the enemy]
30.	Ott nagy erős viadalt Israelnek népei (pogányokkal tartanak.)	1255	There, the people of Israel [fought] a great and strong battle [with the pagans]
31.	Mind napnyúgatig nagy viadalt tarta,	0432	They held a great battle until sunset
32.	Belől terekekkel nagy viadalt tartnak,	1245	They held a great battle inside with the Turks
33.	Ím nagy viadalt hamar ők kezdének.	0574	Behold, they quickly began a great battle
34.	Kapuközbe nagy viadalt tart vala,	0844	He held a great battle at the gate
35.	Kikkel öszve erős viadalt tartának,	0356	With whom they fought a strong battle
36.	Rettenetes viadalt véle tarta,	1328	He held a dreadful battle with him
37.	És nagy viadalt vélök tartának, általmennek vala.	0324	And they held a great battle with them, passing through
38.	Ütközének, nagy viadalt tartának,	0867	They clashed and held a great battle
39.	Derék harcot, sebes viadalt kezdének,	0819	They began a valiant fight, a swift battle

Table 8: All occurrences of "valamilyen viadalt tartani" ("to hold some kind of battle or tourney"). Blue: Nagy/erős/rettenetes/sebes/új/csuda/végső (attributive(s)), Orange: viadalt (object), Beige: kezd/tart/tesz/művel/szerez/törlet/indít [predicate], Green: (subject), Violet: (adverbial of time), Pink: (adverbial of place), Yellow: (comitative adverbial)

present. The tense and the number of the verb might change, and several synonyms of the verb "tartani" ("to hold") might occur in the formula ("szerezni", "tenni", "mívelni"), and if not synonyms, then some verbs belonging to the same semantic field: "kezdeni", "indítani" ("to begin"). The two most frequent adjectives are "nagy" ("great") and "erős" ("strong"), occurring frequently together, but "rettenetes" ("terrible"), "sebes" ("fast"), "új" ("new"), "végső" ("last") do occur as well. The adjective "csuda" ("marvellous") accompanies/complements either "nagy" or "erős". These variations occur in the frames of the formula. The bigram character search identified 17 examples, and 22 others were found manually. Two more verses containing the word form "viadalt" revealed by the automatic bigram search as parallels to the 17 formulaic lines were judged not to belong to the formula.[7]

3.4.2 Intertwining of the Formulas

The analysis of the above formula illustrates perfectly how the formulas form a network in the historical songs, and that this occurrence is not independent of their strong variability. These formulas are not static, and they are not simply enumerated one after the other. By their meaning and their often-changing structure they are intertwined and strongly joined to each other, strengthening the poetic effect of the work.

The character bigram search identified a very high concentration of formulas in the first part of *Rusztán császár históriája* ("A History of Emperor Rusztán") by Anonymous of Drávamellék. This poem shows many signs of oral composition; it lacks acrostics, and the rhyming is clumsy, mainly based on grammatic parallelisms. As a last example of the composition technique in a formulaic style we show the imbrication of three formulas in an excerpt from this poem (Example 3).

The three formulas:

- Úristen + meghallgatni + X (birtokos) + könyörgés (God + to listen + someone's + prayer),

- fölvenni + jelző (szent, nagy) + ke(ö)resztsége(ö)t/szegénységet/gazdagságot (take + adjective (holy, great) + christianity/poorness/richness) the adjectives "nagy" and "erős" also occur in some of these 11 structures, and in six lines the same verb "tartani" occurs, but in a different meaning: "valamennyi ideig tart" ('to last for a period'),

- szeretni + ifjúságban/vénségben + szegénységet/gazdagságot (to love + in youth/in old age + poorness/richness).

The intermingling of the three formulas shows a very conscious, well-trained use of composition technique. The main poetic principle of this poem is without

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7 Another way to express the same meaning is when "viadal" ("battle") is the subject of the phrase. There are 11 cases in the corpus, five of them in poems by András Valkai. The adjectives "nagy" ("big") and "erős" ("strong") also occur in some of these 11 lines, and in six the same verb "tartani" ("to hold" but also "to last") occurs, although with a different meaning: "valamennyi ideig tart" ("to last for a period").

8.
Kérlek, Uram, hallgassad meg én könyörgésemet,
Ne nézd, Uram, pogányságink, de nézd jóvoltodat,
Én is fölveszem Rómaságban az szent körösztséget,
Körösztyénség mellett szegénységet és nyomorúságot.

Please, Lord, hear my prayer;
Do not look, Lord, at our paganism, but look at Your goodness.
I too will receive the holy baptism in Rome,
Alongside Christianity, I will embrace poverty and misery.

9.
Az Úristen meghallgatá asszony könyörgését,
Eustachius mert mikoron ágyban fekünnék,
Fényösséggel, villámlással ő környülvéteték,
Az Istennek ő követe előtte állapék:
...

The Lord heard the woman's prayer,
Eustachius, for when he lay in bed,
Was surrounded by light and lightning,
The messenger of God appeared before him:
...

11.
Azt izené, hogy fölvegyed az szent körösztséget,
Rómaságban ő ez hármon hagyott szabadságot:
Ha szereted ifjúságban az nagy gazdagságot,
Vagy szereted ifjúságban az nagy szegénységet.

He commanded that you receive the holy baptism,
In Rome, He left freedom in these three things:
If you love great wealth in your youth,
Or if you love great poverty in your youth.

12.
Harmadikon ezen hagyott néked szabadságot:
Vénségedben ha szereted az nagy gazdagságot,
Vagy szereted szegénységet, mind szabadon hagyott,
Mert az Isten körösztségedben ezzel látogatott.
...

On the third, He left this freedom to you:
In your old age, if you love great wealth,
Or if you love poverty, all is left free to you,
For God visited you in your baptism with this.
...

15.
Meghallgatá az Úristen ifjú könyörgését,
Meghallgatá Eustachiusnak az ő könyörgését,
Megmutatá: azki nem tűr, nem veszi gyümölcsét.
Halljátok meg, mint mutatá ezekhez szerelmét.

The Lord heard the young man's prayer,
He heard Eustachius' prayer,
He showed: whoever does not endure, does not receive the fruit.
Hear how He showed His love to them.

16.
Ím fölvevé ifjúságban az szent körösztséget,
És az mellett nem vevé föl az nagy gazdagságot,
Meggondolá az háromnak sanyarú vétkeit,
Azt gondolá, föl kölly vönni az nagy szegénséget.

Behold, he received the holy baptism in his youth,
And alongside it, he did not take the great wealth,
He considered the harsh faults of the three,
And he thought one has to embrace great poverty.

17.
Ha én - úgymond - ifjúságban szegénséget veszek,
Ifjúságinkban mi erőnkkel kenyerünket esszük,
Aratáshoz, nagy munkához derekunkat hajtjuk,
Mi testünket nagy munkával be is födözhetjük.

If I—he said—take poverty in my youth,
In our youth we eat our bread by our own strength,
We bend our backs to harvest and hard work,
We can also cover our bodies through hard labor.

18.
Vénségemben inkább veszem az nagy gazdagságot,
Mert akkoron mi erőnktűl inkább megfosztatunk,
Akkoron kölly inkább nekünk az mi szegedelmünk.
Ez szó hallván az Istennek követe elmúlék.

In my old age, I would rather take great wealth,
For then we will be more deprived of our strength,
Then our help will be more necessary.
Hearing this, the messenger of God departed.

Example 3: Three intermingling formulas in the song of the Anonymous of Drávamellék (*RPHA* 373)

any doubt the use of formulas as internal repetition, as opposed to the quality of rhyming or grammatico-syntactic parallelism, despite the presence of rhyme as well as lines built with the same syntax. The rhymes are rather poor, and phonetically they don't always match, for example "gazdagságot" – "szegénységet". The composition reflects orality in all respects, and is in this way similar to the *Cantio* and the paraphrase of the biblical Book of Daniel (*RPHA* 1190).

4   Conclusion

Our investigation attempted to posit a new way of understanding repetition, which gives rise to two of the most salient features of 16th century Hungarian versification: (1) the use of parallel syntactic structures in the lines of the same strophe, and (2) the rhetoric technique of using epic formulas. Among the numerous methods we experimented with, the most fitting tool for analysis of the corpus proved to be character bigram analysis. With the help of this approach we identified a huge number of very similar or identical lines inside the poems, and many shared lines between the poems of the corpus. This dataset offered us an extensive stock of potential formulas. A closer examination of this data allowed us to identify several groups of formulas, having some core elements. On the basis of the results, we proposed a new definition of the epic formula as it appears in our corpus. The computational method also helped us to identify some poems that are certainly influenced by, or largely dependent on, an oral composition technique. The line-long formula definition seems to be a promising starting point for further discussion of intertextuality, simulated orality, and the epic formulas in the Hungarian poetry of early modernity.

Acknowledgments

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