POPULAR VOICES

COMPUTATIONAL ANALYSIS OF POETRY AND SONG

Edited by Mari Väina, Maria-Kristiina Lotman, Anne-Sophie Bories, Pablo Ruiz Fabo, Petr Plecháč, and Susanna Mett

ELM Scholarly Press

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Preface

This edited volume brings together contributions focused on the computational analysis of popular poetic forms, both traditional and contemporary, as well as song lyrics (for instance in folk, pop, or rap) and other studies of poetic text following a quantitative or computational approach. Particular attention is given to the relationships between text and performance, and to poetic expression disseminated through new media platforms such as the social web.

Through the diversity of materials addressed, ranging from German Romantic poetry to Estonian hip-hop, and from Icelandic verse to Bukowski's performances, the contributions share and offer an understanding of poetry as a complex phenomenon that exceeds the boundaries of print, unfolding across multiple media, traditions, and reception contexts. Collectively, the papers demonstrate how digital humanities approaches enable novel forms of analysis, showing that quantitative methods do not flatten poetic texts into abstract data nor disregard their aesthetic dimensions. Rather, processes of formalisation, from basic counting procedures to advanced algorithmic modelling, provide productive means to analyse, describe, interpret, and access poetic works in ways that both complement and expand established scholarly practices.

The volume opens with the transcript of a keynote address by **Mustazza**, in which he examines the relationship between literary audio and popular voices in dialect recordings in the early 20th century. His serious reflection on the question of voices, performance and perception, forms the matter of an actual performance and, as such, has been kept intact, transcribed by the author, allowing readers to appreciate and enjoy its dual nature: at once scholarly and performative.

As for the other, peer-reviewed articles in this volume, several of them address **historical corpora**, in most cases focusing on the **poetry–music relationship** they display. **Helgadóttir** discusses methods to find structural units and their variants in postmedieval Icelandic *þulur*, a folk poetry genre. **Seláf et al.** investigate 16th-century Hungarian epic poetry, computationally identifying traces and features of traditional sung poetry within early written poetic texts. **Couturier & Nugues** introduce a database documenting tune reuse across a corpus of vaudeville couplets and songs from the 19th and 20th centuries. **Polilova** examines the deployment of Russian Dk3 meter (three-ictic dolnik) in the translation of Spanish romances, situating these findings in relation to both

original dolnik rhythms and dolnik usage in Russian translations of Heine. **Koch et al.** provide a quantitative survey of textual, prosodic and sonic aspects in *The Boy's Magic Horn (Des Knaben Wunderhorn)*, an early 19th-century German collection of poems appreciated in both folk culture and 'high' culture contexts, including its musical settings by composers such as Mahler and Brahms. Their contribution also reports on speech synthesis experiments trained on poetic corpora.

Shifting to the **interplay between poetry and 20th and 21st-century popular song**, **Macaud** presents a study of the online remediation of Bukowski's poetry performances drawing on a corpus of YouTube videos by amateur readers. **Lotman & Lotman** compare rhyming patterns by two Estonian rap artists with those found in Estonian literary poetry, identifying innovative rhyming strategies in Estonian rap that emerge through contact with Western models. **Martínez et al.** examine textual transformations in musical adaptations (since 1975) of poems in Spanish, using automatic collation followed by manual annotation to account for repetitions, omissions, additions, and other modifications required by the shift to a musical medium.

The reflections gathered here first emerged from the 5th Plotting Poetry conference held at the Estonian Literary Museum in Tartu in July 2022, organised by Mari Väina (Estonian Literary Museum), Maria-Kristiina Lotman (University of Tartu), Susanna Mett (Estonian Literary Museum & University of Tartu), Anne-Sophie Bories (University of Basel), Pablo Ruiz Fabo (University of Strasbourg) and Petr Plecháč (Czech Academy of Sciences). Together, they served collaboratively as the editors of this book.

Pablo Ruiz Fabo, Mari Väina, Maria-Kristiina Lotman, Anne-Sophie Bories, Petr Plecháč, Susanna Mett

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The Voices We Do: Surplus Inscriptions in the Poetry Audio Archive

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The following is a keynote lecture I gave for the fifth edition of the Plotting Poetry Conference, held in Tartu, Estonia on July 5, 2022.[1] It is meant to be heard, rather than read, and I hope you will do your best to imagine it as speech rather than writing. The ideas set forth in this piece are heavily entwined with the voice as medium. As such, I have consciously avoided converting this talk into a more standard academic article.[2]

Disclaimer & Introduction

I want to start with a disclaimer, a sort of content warning about this talk. In this lecture, you will find no thesis. I have no argument, in fact, I rarely have an argument—I'm a very agreeable guy. You will find no solutions in this talk, only problems. You will not come away from this talk knowing how to do anything or with a simple message you can pithily describe to others.

It's even arguable whether I, that is the person speaking to you, am using my own voice. I mean, what does it mean to own a voice anyway? Aren't I an amalgam of all of my life's experiences, and if so, why should my voice be any different? In my voice, you might hear some resonances and regional speech sounds of my parents' New York of the 1950s and 1960s filtered through my own time in the city in the 1980s. You might hear the influence of my teachers, my mentors, those I consider to be models of giving academic lectures. You could hear the genre of the video conference, of Microsoft Teams, as it were. The kinds of lilts and pauses endemic to this medium, uncertain of whether you can hear me or if my mic is even on (is my mic on? Can you hear me?, spoken with a hint of anxiety that you cannot, in fact hear me, as these words are floating into the ephemeral void). I guess I contain multitudes, or there are multitudes of Is, either way is fine for us.

[1] Editorial note: This article has not undergone peer review; it is based on the author's plenary lecture and is presented in its original form.
[2] A recording of the lecture is available here: https://youtu.be/iV9INJd0Tlo?si=bkkyFZR_stKGGr9o.

In any event, my goal today will be to present to you a problem and an opportunity devoid of any conclusion. The topic is simple: we have greater access than ever before to recordings of poets performing their own work.[3] But what exactly is recorded in this audio? Or put another way, who exactly is recorded? If the I speaking to you right now, that is the entity you recognise as Chris Mustazza, is plural and myriad, then why should the poets we hear be in these recordings be any different? If anything, considering the voices they do as part of their performances is even more complicated than parsing everyday speech.

Let me back up for a minute. Those of you who have been attending the conference for a while may have seen me speak about my work to locate instances of the sermon in poetry recordings. That talk, and this one, are premised on the idea that modernist poets often structured the soundscapes of their poems after what I term *apposite sonic genres*. We are so used to thinking about poetry as writing and classifying it as such, that scholars often neglect how sound recordings of poets might offer alternative classifications. In my previous papers, I looked and how the great poet James Weldon Johnson embodied black preachers of the early twentieth century in his poems.[4] Of course, Johnson is doing so explicitly, suggesting his connection to the Rev. A.W. Nix and preachers like him in his statement of poetics.[5] But what about other performances where the sonic reference is not given so plainly? We can definitely use our ears to say, "this performance sounds like [...] an ad, a political radio speech, a comedy monologue, etc." For example, we can hear the form of stand-up comedy in Louise Bennett's devastating anti-colonial performances,[6] and we can hear the sounds of Italian Fascism in the speech cadences of F.T. Marinetti's Italian Futurist manifestos.[7] That is, in all of these cases, the poets are doing voices, namely voices shaped on genres recognisable to an audience.

In my project, I worked to see if machine listening and artificial intelligence could locate these genres across a heterogeneous poetry audio archive, using what Tanya E. Clement has termed distant listening.[8] Could we, for example, train an algorithm to recognise what the sermonic sounds like (or I should say one particular strain of the sermonic) and locate instances where a poet is doing a sermonic voice across the entire 6,000 hours of audio within PennSound?

The process of doing so involved training a neural network using a corpus of early twentieth century recordings of performances that identify themselves as sermons. Surely, if the labels of the records said that they were sermons, they must be fixed reference point which we can use to train the machine, right? Or could it be that the preachers recorded on these records were themselves doing

[3] See, for example: PennSound, SpokenWeb, Les Archives Sonores de la Poésie, Voices of Italian Poets, etc.

[4] Mustazza, Chris. "In Search of the Sermonic: Machine Listening and Poetic Sonic Genre." *Computational Stylistics in Poetry, Prose, and Drama* ed. Bories, Plecháč, Fabo, DeGruyter, 2022, pp. 87-98.

[5] Johnson, James Weldon. *God's Trombones*. Viking Press, 1927.

[6] Bennett, Louise. "No Lickle Twang." https://www.youtube.com/watch?v=sW9GeQF-1bU.

[7] Marinetti, F.T. *PennSound Audio Collection.* https://writing.upenn.edu/pennsound/x/Marinetti.php.

[8] Clement, Tanya. HiPSTAS Project. https://hipstas.org/.

different voices, and if so, how can we train the algorithm to locate the one that we want?

You see the problematic that is taking shape. In training a neural network with examples of speech, we cannot know what facets of the speech the network is matching on and whether those are aspects of a sermon or … something else … regional speech patterns, for example, or even a voicing that is shaped by the preacher attempting to project his voice to the back of the church. The same considerations apply if we attempted to write a supervised learning algorithm where we would pick out what, to our ears, makes these recordings sermonic, describe it empirically, and write an algorithm to locate it. In both cases, we are dealing with a moving and morphing target.

So we started with a simple question, what and whose voices are recorded in any given performance of poetry, and we've come to an ostensible impasse, where does one voice end and another begin? Given that I do not have an answer for you, I was hoping you could tell me during the Q&A. But for now, let's aimlessly wander around the notion of voices in literature and how we might think about its application to poetry audio and everyday speech.

Voice(s)

What do you think about when someone mentions "the voice" in a literary work? So often, this singular term, is used to describe something about the written style of a work. One could imagine an MFA seminar where the topic is finding your voice. I wasn't sure what it meant, so I did what any good scholar would do and Googled it. Here's the authoritative word from Google: "In literature, 'voice' refers to the rhetorical mixture of vocabulary, tone, point of view, and syntax that makes phrases, sentences, and paragraphs flow in a particular manner."[9] Sentences and paragraphs? That's disappointing. Not utterance, phrasing, tempo, prosody, timbre, or any other dimension that would suggest actual speech, spoken language?

In short, voice is mostly used a metaphor. There is no actual voice in writing, only what we might reconstitute from printed characters in our minds, read through our own identities and imaginations. And, of course, some of the most important scholars of the twentieth century grappled with the nature of this metaphorical voice and its reception, including T. S. Eliot, Saussure, Bahktin, Derrida, and the list goes on. But I would argue that this is a technological problem, rather than a philosophical issue. Best to call your IT person rather than your ontologist or epistemologist for help here. These conversations are premised on the fact that print was perceived to be dominant form of literary dissemination for the entire twentieth century. The coeval rise of sound recording and access to it slowly eroded that reality, until today anyone can make their lived, spoken voices available using only the phone in their pocket.

In the era before easily accessible sound recording, poets worked to score the sounds of their free verse works to the printed page. Consider Charles Olson, who spoke about the typewriter as a device for the musical scoring of text: "For

[9] https://www.masterclass.com/articles/how-to-find-your-writing-voice.

the first time the poet has the stave and the bar a musician has had. For the first time he can, without the convention of rime and meter, record the listening he has done to his own speech and by that one act indicate how he would want any reader, silently or otherwise, to voice his work."[10] In other words, poetry exists first as sound, as the author's voice, and the printed page is a sort of ersatz sound recording of sorts. In the absence of an audible voice, it will have to be good enough and some performance instructions might help this sheet music to be interpreted. But it would be better if you could hear it with your own ears, directly from the poet.

All of this changes with the rise of literary audio, which picked up steam during the mid-century and only accelerated from there on. In fact, as a corollary to our topic of popular voices, I will mention that the first American poetry audio archives were made in linguistic speech labs, whose primary purposes were the study of dialects via human subject research.[11] While the archives created some of the earliest or only recordings of the most eminent modernist poets, like T.S. Eliot, James Weldon Johnson, and Gertrude Stein, their primary purpose was to record speech samples of everyday Americans.

So in the rise of literary audio, in contrast to the metaphorical voices in writing, we are presented with mediated representations of embodied voices. I wouldn't dare say "real voices", lest you take me to task in the Q&A, but maybe … realer voices? Could we agree on that? OK, how about … voices you can hear with your ears? Voices that cause your eardrums to vibrate as disturbances to air pressure? It's like the difference between sheet music and a concert, or the difference between libretto and an opera, or like … I'm trying to be literal here, none of this is a metaphor! Do you know what I mean?

But as we spoke about, and much to the chagrin of my empirical aspirations, every voice is plural. So what I would like to do for the duration of this talk is to try to enumerate some of the voices present in any one poetry recording, backgrounded performances of identity and social situation that I refer to here as *surplus inscriptions* to suggest that they exist beyond what many would consider part of the poem proper. But I would argue these murmuring, polyphonous voices come together to create the sonic form of the poem, spoken by a multitudinous author and received by an equally complex listener.

1 Personal and Literary Influence

It's no secret that we can come to inhabit the voices of those closest to us. I often ask my students: do you ever say something and then think to yourself "I sound just like my mother"? I don't mean the particular word choices, but rather the pronunciation, tempo, phrasing, or intonation of those words. As this concept of subconscious imitation relates to poetic performance, we can often hear aesthetic lineages performed as sound. Perhaps the most curious case of

[10] Olson, Charles. "Projective Verse." Poetry Foundation, https://www.poetryfoundation.org/articles/69406/projective-verse. Accessed Feb 9, 2023.

[11] Mustazza, Chris. "Speech Labs: Language Experiments, Early Poetry Audio Archives, and the Poetic Record." https://repository.upenn.edu/edissertations/3467/.

this phenomenon is between William Butler Yeats and Ezra Pound. A young Pound was Yeats' secretary and poetic admirer. Of course, it makes sense that some of Pound's performance techniques might derive from Yeats. But … how much of an imitation is flattery or homage and how much is … appropriative (or just weird)?

Yeats is recognised as one of the greatest Irish poets, and Pound spent his formative years outside of Philadelphia and at the University of Pennsylvania, where I teach. He later became known as perhaps the quintessential American expatriate poet, residing between England and Italy, until his ignominious extradition to the US on the charge of treason.

Let's listen to an early recording from PennSound, Yeats performing his iconic "The Lake Isle of Innisfree", recorded in 1936.[12] The voice is sonorous, mellifluous, and wistful. It extends the content of the poem, which is about Yeats' memories of his childhood home. It is about memory and its relation to presence and lack. The performance does not sound modern even for its time. Its chanted religiosity connects it to an earlier age of performance. Most importantly, Yeats sounds, well Anglo-Irish. We can hear the regional speech sounds that derive from Yeats' childhood home in Sligo and his upbringing in England. One of the distinctive characteristics of his speech is the rhoticity with which he rolls his Rs.

It is indeed uncanny to listen to performances by Pound in relation, such as this recording of "Sestina: Altaforte" recorded at Harvard in 1939.[13] Now, I don't know if any of you have been to Philadelphia, but I have lived here for most of my life and I have never encountered anyone who sounds even remotely like Pound does here. I would say, though, that the resemblance to his Irish mentor's performance is striking. Pound affects a kind of pseudo-brogue, rolling his Rs, and chants in the style of previous generation's poets. Pound's performance style goes beyond homage, it goes beyond pastiche, it drifts into unconscious caricature. We can say without exaggeration that Pound is doing a Yeats impression, and a pretty good one at that. I think I like Pound's Yeats better than Yeats' Yeats, in fact.

What we are hearing here is a very specific form of literary influence transmitted through speech, namely between poets who spent time in physical proximity to each other. We can hear the same kinds of influence in so-called literary scenes, where groups of poets who lived near one another came to perform like each other.

We could also look at what we might call … a case of mistaken identity. The poet Robert Creeley cited William Carlos Williams as one of his primary influences. Unlike Pound's direct relationship with Yeats, Creeley had never actually heard Williams perform, yet he built his own signature performance style based on what he *imagined* Williams sounded like, based on William's writing. Here's a sample of Creeley performing his hit single "I Know a Man".

[12] Yeats, W.B. "The Lake Isle of Innisfree". *PennSound*. http://media.sas.upenn.edu/pennsound/authors/Yeats/Yeats-WB_Lake-Isle-of-Innisfree_10-28-36.MP3.

[13] Pound, Ezra. "Sestina: Altaforte." *PennSound*. http://media.sas.upenn.edu/pennsound/authors/Pound/1939/Pound-Ezra_01_Sestina-Altaforte_Harvard_1939.mp3.

Note how he pauses at the end of each line.[14] The story goes that Creeley, so influenced by William Carlos Williams and his writings on the variable foot and his syntax-rupturing line breaks, was sure that Williams must have paused at the end of every line: why lineate a poem as such if he didn't? Well, he didn't. Williams reads straight through the enjambment in this 1942 recording of his famous "The Red Wheelbarrow".[15] Creeley had never heard the sound recordings of WCW performing and was influenced by an imagination of a voice. Williams' voice. A metaphoric voice in writing. This is an impression of a style that never was, yet this attempt to copy made something new.

Much more could be said about topic of personal influence, but in the interest of time, let's leave it at this: one of the surplus inscriptions in the poetry audio archive is that of aesthetic and personal influence.

2 Real or Performed Locality

We just spoke about Pound appropriating Yeats' identity as his own. The notion of regionality and place is often foregrounded in modern poetry, again with varying levels of, dare we say the word, *authenticity*. This is to say that poets perform place through the use of regional accents that are sometimes aligned with their own conversational speech sounds and sometimes ... less so. Sometimes the voices being done are from ... somewhere else ... someone else, varyingly problematic impersonations.

One example of this was Robert Frost's association with rural New Englanders. Born in San Francisco, raised in the small city of Lawrence, Massachusetts, and educated at Dartmouth College, Frost's upbringing was not that of a working-class New England farmer, the identity most of his poems would embody. Let's listen to a sample of Frost performing "The Code", recorded in 1933 at Columbia, University.[16] As Frost tells the frame story of a migrant farm labourer recounting to his current employer how he almost killed his previous employer, the aural mise-en-scène is crafted through Frost's application of regional accent, foregrounding the localism of the worker and dampening his accent for his performance of a generic employer. In other words, it is clear that the urbane Frost identifies more with the rural worker than with the bourgeois employer. While there are no recordings of it, Frost's "Death of a Hired Man" suggests similar dynamics, and in the recording of his canonical "Mending Wall", we can hear Frost doing the voices of two New England farmers.[17] Frost does not seek to mock his appropriated regional accents, but are they his to perform? Performances of the imagined rural, local, and everyman suffuse poetry recordings, an artifice that yearns for an authenticity, the desire to represent another,

[14] Creeley, Robert. "I Know a Man". *PennSound*. http://media.sas.upenn.edu/pennsound/authors/Creeley/Harvard_10-27-66/Creeley-Robert_18_I-Know-a-Man_Harvard-10-27-66.mp3.

[15] Williams, Willam Carlos. "The Red Wheelbarrow". *PennSound*. http://media.sas.upenn.edu/pennsound/authors/Williams-WC/01_Columbia-Univ_01-09-42/Williams-WC_01_The-Red-Wheelbarrow_Columbia-Univ_01-09-42.mp3.

[16] Frost, Robert. "The Code". *PennSound*. https://media.sas.upenn.edu/pennsound/authors/Frost/Frost-Robert_06_351A_The-Code-Part-1-Take-1_Speech-Lab-Recordings_New-York_1933.mp3.

[17] Frost, Robert. "Mending Wall". *PennSound*. https://media.sas.upenn.edu/pennsound/authors/Frost/Frost-Robert_10_355A_Mending-Wall_Speech-Lab-Recordings_New-York_1933.mp3.

to embody a voice that is not one's own. Frost's own New England accent is a voiced identity in this poem, yes, but it is paired with an overdone version of itself. These voices of place are surplus inscriptions to layer on to personal influence and sonic genre.

3 Voices Shaped by the Processes of Mediation

Finally, another layer of sonic inscription is the way technology (or the lack thereof) influences the voices we do. The voicing of much contemporary poetry, which is subtle, vulnerable, and delicate, is a product of the microphone era, the era of so-called electrical recording. The microphone allowed for this understated voice to be captured as audio. Before the invention of the microphone, in the era of acoustical recording, we can hear voices shaped by the need to project the voice. Performers were either accustomed to only live performances without recording, where their voices had to reach the back of the church or theatre, or to very early recording technologies where the performer had to bellow into an acoustic horn in order to be audible. Indeed, the microphone did not appear in commercial recording studios until 1925 and began its dominance of shaping sound with the crooning of Frank Sinatra, which could be said to be as much the microphone as it was the man.

Let's consider the founder of Italian Futurism, F. T. Marinetti, here. Marinetti is most famous for his Futurist Manifesto, which was published on the front page of Le Figaro in 1909. He called for a style of art that rejected everything from the past and perpetually attempted to remake the world anew through the latest technologies. It was a problematic movement to say the least, but it was influential on most strains of art, from poetry through to cooking and fashion. Marinetti was a bombastic figure, which we can hear in this recording of "Definizione di Futurismo" from 1924.[18] The defining facet of this work is Marinetti's characteristically aggressive delivery of his rules for the remaking of art. But it's more than aggressive. It's shaped, I argue, by Italian political speeches of the time, which were often given live in a piazza and broadcast over the radio across the country and into colonised regions in the north of Africa. It's unclear if they are electrical or acoustic recordings, but even if Marinetti had to project a little for the acoustic horn, his speech is modelled on one of public address. It's as if he is on a balcony bellowing at his aesthetic adherents below. It's as if he imagines this sonic assault to be cast out onto the airwaves. The imagination of the technology (or its lack) makes the voice.

Once the microphone became standard equipment, for both recording and amplification, its softened sounds became the norm and shaped performances. The deep interiority of the so-called Confessional Poets of the 1950s and 1960s was extended and formed through the sounds of the microphone. And performers who continued a theatrical performance style shaped around live spaces did so with the knowledge that they were subverting the current standards.

[18] Marinetti, F. T. "Definizione di Futurismo". *PennSound*. http://media.sas.upenn.edu/pennsound/authors/Marinetti/Marinetti-Filippo_Definizione-Di-Futurismo_1924.mp3.

Amiri Baraka's poems,[19] those of Charles Bernstein,[20] and Anne Waldman[21] all call attention to themselves by refusing the sonorous qualities enabled by the microphone.

Marinetti was blending a sonic genre, the political radio speech, and the sounds of the technology of reproduction to create his sound. Consider, here, the contemporary concept of Podcast Voice, which is the dominant voicing of podcasts shaped by both the conventions of the medium and the specific condenser microphones used in the production of the episodes. Turns out that we're not just doing voices, we're doing several at the same time.

In Conclusion

We started from the question of how we can empirically describe voices to identify via deep learning methods, and the philosophical question of whose voices were in any given vocal recording. Recordings of Pound contain his impression of Yeats. Recordings of Creeley, an imagined mentor. Recordings of Frost, performances of regional and socioeconomic differences. Recordings of Marinetti, a political agenda and a medium for disseminating it. How can we identify what voice is being done if multiple voices are being done at the same time, overlapping, intertwining, echoing, cancelling, and amplifying each other at various points? Or can a voice be separated, described with prosodic vocabularies, and algorithmically identified?

Here is the answer you've all been waiting for: Well, beats me! I don't know. When I started this project, I just wanted to find recordings that sounded like sermons. But now I'm not sure what it is—or who it is—the machine is finding when it clusters 'similar' recordings. But at the same time, I think the problems with this method are more interesting than any solution it could ever provide. The problems go beyond poetry and speak to everyday speech, to the deep heart's core (to borrow from Yeats) of identity and its malleability. The question is who are you? That's a plural you. Whose voices are we doing at any given moment? Where did we get them? What makes them us?

It calls into question the very notion of authenticity or a singular self. We *perform* our identities all day everyday, as Erving Goffman argued.[22] So why should performance or artifice be seen as something artificial or insincere? It would be insincere to suggest that there is a singular self outside of performance. The only question then is what the nature of this performance is.

[19] Baraka, Amiri. PennSound Author Page. https://writing.upenn.edu/pennsound/x/Baraka.php.
[20] Bernstein, Charles. PennSound Author Page. https://writing.upenn.edu/pennsound/x/Bernstein.php.
[21] Waldman, Anne. PennSound Author Page. https://writing.upenn.edu/pennsound/x/Waldman.php.
[22] Goffman, Erving. *The Presentation of Self in Everyday Life*. Anchor Press. 1959.

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Textual Variation and Representative Selection of Texts: The Case of the Post-Medieval Icelandic *þulur*

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Abstract

This article aims at an objective solution to the methodological question of effective text choice – for purposes of research and scholarly editing—for certain genres of folk poetry where texts are relatively short, but highly variable and at times have no clear boundaries. My focus is on Icelandic post-medieval *þulur*: versified, but not stanzaic, lists of names, short motifs and/or longer narrative episodes in very free poetic form. My hypothesis is that the selection which most adequately represents a useful overview of such texts, while also reflecting their specificity, should be based on the most typically encountered variant(s) of most common structural units of *þulur*, which are identified using quantitative methods. The article offers an algorithm for the text selection and discusses its advantages and shortcomings.

1 Introduction

In this article, I will propose and test a method for effective text choice for relatively short, but highly variable folk poetry—an urgent task for a scholar of Icelandic post-medieval *þulur* (hereafter PMÞ) or kindred poetic genres, which are under-researched due to a shortage of systematic and reliable editions.[1] The

[1] The edition that is usually cited is Jón Árnason and Ólafur Davíðsson 1888–1903; PMÞ texts, sometimes blended with other genres (as is the case in most editions), are in vols. 3: 384–397 & 4: 144–146, 175–221, 234–242, 246, 249–251 and passim (in Icelandic, as are most sources referred to in this note). This edition is rather unreliable (Aðalheiður Guðmundsdóttir 1997; Yelena Sesselja Helgadóttir 2020, pp. 70–72) and should be used with much caution. The few reliable editions containing PMÞ only have a very limited number of PMÞ texts each, as they are primarily editions of ballads and other related poetic genres (Jón Samsonarson 1964, PMÞ in vol. 2: 285–287, 305–314 and passim; Jón Helgason 1962–1981, vol. 8: 112–116) or sampler editions of different genres (Rósa Þorsteinsdóttir 2009, pp. 18, 20, 25, 39, 42–43, 46–47, 55, 64, 72, 74–75, 78, 82–83, 101, 104–106, 108, 112–113, 118). An article by Jón Samsonarson has a reliable, although limited, selection of PMÞ texts (2002, pp. 79–102). I also greatly benefited from careful reading of Jón Samsonarson's uncompleted edition of PMÞ (preserved at the Árni Magnússon Institute for Icelandic Studies). For more details on editions of PMÞ texts see my dissertation (Yelena Sesselja Helgadóttir 2020, pp. 70–74, cf. 67–69 (in Icelandic)).

central challenge is that of finding an algorithm that would yield a manageable, but representative selection that reflects the specificity of the genre in question. No recognised algorithm or publishing strategy exists at the moment for PMÞ and some kindred poetry due to their rich textual variation, which makes even identifying them as poems problematic.

The research is based on manuscript sources from the 17th to 20th centuries and on 20th century audio sources. Both types largely originate in the two most prominent folklore collection campaigns in Iceland. The former campaign, 1845 to ca. 1870,[2] resulted in over 50 manuscripts, each with the number of PMÞ texts ranging from one to several hundred (in large compendia such as DFS 67). The latter campaign, ca. 1960 to 1990,[3] yielded ca. 2,000 audio recorded PMÞ texts, several manuscript compendia (up to a hundred PMÞ texts each) and over 850 texts received in response to a questionnaire from 1984.[4] The total number of known PMÞ texts is about 4,500, a large majority of them unedited and undigitised. For this study, a corpus of about 2,500 PMÞ texts (from every kind of sources) was selected.

In Section 2, I will further introduce my project, its subject matter—PMÞ—and methodological challenges. Section 3 describes the proposed method and its distinct stages. Section 4 discusses some methodological problems and first results of the project, while Section 5 offers preliminary conclusions.

2 Icelandic Post-Medieval *þulur* and the Methodology for Their Analysis

Icelandic post-medieval þulur (PMÞ) are a form of folk poetry practiced from ca. the 15th to 20th centuries, 25 lines on average (ranging from 7 to over 100 lines),[5] characterised by:

1. A quite free poetic form, governed by much more flexible rules than Icelandic post-medieval poetry in general. It was analysed in some detail in my dissertation *Íslenskar þulur síðari alda* (Icelandic Post-Medieval *þulur*) (Yelena Sesselja Helgadóttir 2020, pp. 90–141 (in Icelandic; English

[2] Although the campaign was formally announced in 1845, in was never formally closed; rather, it became considerably less active around 1870. This explains my "ca." before the date.

[3] This campaign was hardly ever announced formally. Therefore, "ca." here covers both its end and its beginning.

[4] Audio archives are available at *Ísmús: íslenskur músík- og menningararfur* (https://www.ismus.is; the page is only in Icelandic) along with rich metadata; however, only few texts have been published. A (draft) transcript of the questionnaire and of a large number of responses is available at: *Sarpur: Menningarsögulegt gagnasafn* (https://www.sarpur.is/Spurningaskra.aspx?ID=531300; the page is only in Icelandic). Most manuscripts with PMÞ texts that are available online (information and/or photos) can be found at *Handrit.is* (https://handrit.is/?lang=en) and *NorS Sprogsamlinger* (https://sprogsamlinger.ku.dk/q.php?p=ds/hjem, under "Arnamagnæansk"; in Danish only).

[5] The minimal number of lines for PMÞ is defined as 7 in my dissertation (Yelena Sesselja Helgadóttir 2020, pp. 92–94), taking into consideration that this is the most prominent borderline between short forms (such as single stanzas) and longer poems (where PMÞ belong) in Icelandic post-medieval poetry. Occasional shorter PMÞ-like texts are most often PMÞ fragments and are treated as such.

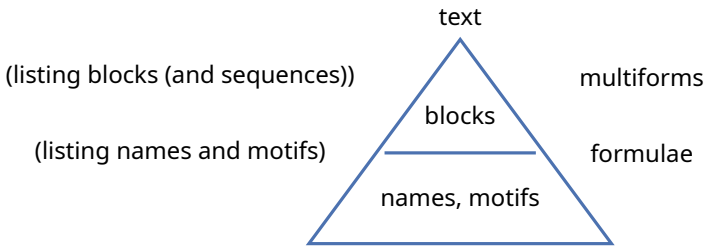

Figure 1: The two-level structure of PMÞ

Summary on pp. 283–285)); see also Yelena Sesselja Helgadóttir 2016 (in English).

2. A loose and highly variable two-level structure based on lists, as I have previously shown (Yelena Sesselja Helgadóttir 2020, pp. 144–249). The lists at the first level consist mainly of names (proper and common) and motifs which combine in various ways to produce relatively stable second-level units that I have designated as "blocks" (Figure 1), while blocks sometimes combine into larger and less stable units of the same level, called "block sequences". PMÞ texts can be made of units from both levels. Formulae and multiforms (in the sense of Frog 2017) are additional, cross-level compositional features of PMÞ supporting the structure (Figure 1; Yelena Sesselja Helgadóttir 2020, pp. 192–195, 218–224, cf. 2016).

3. A world-descriptive and world-creative function (Yelena Sesselja Helgadóttir 2020, pp. 261–268), rather than a mode of narrative or lyrical expression.

4. A strong relationship with, on the one hand, Old Norse/Icelandic þulur (lists of poetic names, out of which the structure and function of the PMÞ have developed), and on the other, continental Scandinavian post-medieval folk poetry (Yelena Sesselja Helgadóttir 2020, pp. 25–37, 262–264).

An example of a PMÞ text and its structure can be seen in Table 1.[6]

A problem in the study of PMÞ is their instability even at the very basic structural level. In many cases, there is no text (or group of texts) that is stable enough to be labelled a poem. For example, there is hardly any way to tell whether text A, containing four blocks labelled "ABCD", and text B, containing blocks "ABDEF", can be identified as being the same poem. The PMÞ are thus much more variable than, for example, ballads and most other Icelandic folk poems. This combination of variability and instability poses unique challenges with regard to producing a representative text selection. While it has long been standard to publish, for instance, ballads in accordance with type classification

[6] Spelling of quotations is normalised to Modern Icelandic. Punctuation is original. Necessary inserts are supplied in angle brackets. In Table 1, problematic English translations are in square brackets. The multifold meanings of the names here are discussed in (Yelena Sesselja Helgadóttir 2020, pp. 160–165).

Búkonan dillaði börnunum báðum	The housewife lulled both [sic] children	Introductory motif	BLOCK	BLOCK SEQUENCE *Heyrði ég í hamrinum* [I heard in the kliff]
Jórunni Þórunni Ingunni Kingunni Aðalvarði Ormagarði, Eiríki og Sveini,	Jórunn Þórunn Ingunn [Kingunn] Aðalvarður [Ormagarður], Eiríkur and Sveinn,	Name list (formulae-aided)		
mu<n>du fræn<d>urnar þínar[7]	remember your relatives	Connecting motif		
Kambur Skæringsson, Skæringur Brandsson Brandur Björgólfsson Björgólfur Hringsson Hringur Hreiða<rs>son [...] Bjór Brettingsson Brettingur Hakason Haki Óðinsson	[Kambur] son of Skæringur, Skæringur son of Brandur Brandur son of Björgólfur Björgólfur son of Hringur Hringur son of [Hreiðar] [...] [Bjór] son of Brettingur Brettingur son of Haki Haki son of Óðinn	Name list (formulae-aided)	BLOCK	
allra illra trölla faðir í hellri —	the father of all evil trolls in a cave —	Closing motif		

Table 1: PMÞ text (ÍB 816 8vo, 109r–109v) and its structure

systems (such as TSB), no type classification has been established for PMÞ or related Scandinavian rhymes, although this has been attempted (e.g., Nordlander 1886, pp. 7–8).[8]

The purpose of my project, which is eponymous to this article and is supported by the Icelandic Research Fund (grant 228363-051, 2022–2024), is to yield a representative selection of texts that reflects the specificity of the genre in question. The task is quite urgent, as availability of a fairly representative text selection is a pre-requisite for research—and therefore for a genre becoming involved in literary and/or folkloristic research-based discussion. Without such text selection being accessible, the genre in question runs the risk of remaining virtually invisible to many a researcher, even in allied areas of studies, as the case of PMÞ demonstrates.

In order for text selection to be representative and reflect the specificity of the genre in question, it is reasonable to include this specificity into the text selection process from the very start. PMÞ do not appear to have a single "most specific" feature (cf. Yelena Sesselja Helgadóttir 2020, p. 274); however, one of the most specific features of PMÞ—and probably the one that is most related to text selection—is their loose and highly variable two-level structure based on the listing principle, described earlier in this section.

The actual structure of PMÞ texts is certainly not always as clear-cut as the model shown in Figure 1, or even as the example in Table 1. PMÞ texts can contain (fragments of) numerous blocks or even of block sequences (as in the text in AM 277 8vo, 32v or AM 960 XX 4to, 3r), or even of texts belonging to other

[7] Words 2–3 are feminine in this line, but masculine in standard Icelandic.

[8] The question of applicable editorial strategies is not discussed here due to space limits. It may still be noted that eventual publication of the whole text corpus of PMÞ (most probably, online) is a long-run objective of my work, in spite of being very time-consuming. The time factor is one of the reasons for publishing a representative text selection first. Other reasons include the unreliability of the edition that is often used (cf. note 1 on Jón Árnason and Ólafur Davíðsson 1888–1903) and at least some readers' preference for a concise text selection to familiarize themselves with a genre.

genres (as in DFS 67, 256v–257r). This type of folk poetry is everchanging; a block (or a block fragment) may turn up inside another block, compound motifs and motif complexes make their way into PMÞ texts, and further levels appear within the two basic levels—nonetheless, the two basic levels defined above retain their foundational quality.

PMÞ are folk poetry; the methods of classical philology—or even new philology (cf. Wolf 1993)—are scarcely if at all applicable to such texts for the purpose of producing a representative text corpus. Making a stemma is most often impossible; besides, it is meaningless for the purpose of producing a representative text selection in terms of this project, since the oldest and, in this sense, most "original" text of a block is not necessarily representative of PMÞ structure. In a similar way, giving priority to a geographical approach would potentially lead to the listing structure of PMÞ being underrepresented in the resulting selection (besides, Icelandic PMÞ appear to be quite monotypic throughout the country). The same is likely to be true in text selections governed by chronological, topical or other traditional principles. This can be remedied by making the structure central in selecting texts.

In the case of folk poetry with unclear poem boundaries, but chiefly consisting of a limited number of structural units (such as PMÞ blocks) which have clearer boundaries than the poems, a manageable and representative selection can be based on the typology of these units. Thus, PMÞ structure can also serve as a tool for selecting texts. My hypothesis is that the selection which most adequately represents a useful overview of highly variable texts such as the PMÞ, while also reflecting their specificity, should be based on the most typically encountered variant(s) of the most common structural units of PMÞ, primarily PMÞ blocks. Chronological and geographical considerations should then be applied as second and third criteria of text selection. In the case of PMÞ, then, a very minimal representative selection (of probably 50–100 texts) can be based on one text of each of the roughly 50 blocks and their subtypes already identified; each text should contain the most common variant of the respective block. A properly representative selection should also contain the most common variants of other essential building units: motifs,[9] names, and preferably block sequences. Testing my hypothesis and evaluating the quantity of texts representing several building units—and thus possible economy (to result in the minimal number of texts) in the (final) corpus—is among the main aims of my project. Among the evaluation criteria is practicability of the selection process described below, as well as whether the ratio of texts representing several building units turns out to be high and the ratio of motifs, names and block sequences, not represented in the main corpus, proves to be low.

The methodology of this project is in line with Honko's (2000) conventional concept of "textuality" in that it prioritises meaning of the text and its connection with variation over formal aspects of variation or geographical and temporal factors. The purpose of this particular project, on the other hand, is not to create

[9] Motifs are defined in my dissertation as simple, repeated descriptions of various kinds of events, actions, conditions, and so on (Yelena Sesselja Helgadóttir 2020, pp. 179–180, in line with Jason 2007; cf. Gasparov 1997, p. 14; Neklyudov 2004; Thompson 1946, pp. 415–416). "Essential motifs" are those that occur in at least ¾ of all texts containing the respective block, as well as those that change further course of PMÞ-text.

a thick corpus of folk texts (in the spirit of Honko's ideas) but rather a rigorously limited text selection. Such selection will, nonetheless, prioritise meaning over time and place and have the potential to become the necessary foundation for a more extensive scholarly publication of PMÞ texts. This study, which focuses on the "typical" in variation and meaning, is a prerequisite for exploring less common variation and its potential connections to the location of texts and their cultural context.

3 Procedure

Section 3.1 describes the procedure of frequency analysis applied in order to ascertain the most common variants of the building units of PMÞ. Employed together with a comparison of texts, frequency analysis allows one to estimate which kinds of variation occur most typically and which variants are most representative. These methods are used for both levels of the structure model of the PMÞ as described in Section 3.2–3.3. Updating and refining the selection is addressed in Section 3.4–3.5.

3.1 Frequency Analysis

The most typically encountered variants of building units of PMÞ are identified through frequency analysis. This includes manually encoding the building unit in question throughout the PMÞ text corpus under consideration, allocating each sub-unit or its variant a letter. For instance, encoding a block involves labelling each motif and name or name combination; the first block in Table 1 would thus be described as "I 23: dfjioe" (where *I 23* is a unique text number). Sorting and counting—that can easily be done in, for example, Excel—reveals the most common structure for the building unit in question (for our block, it is "abcdfijoe", occurring in roughly 50% of the texts that include the block). It is also helpful for ascertaining rare and unique variants of the building unit in question.

It is important that sub-unit variants are generally not taken into account in the analysis of units, as this will be done at a different stage of the project (Section 3.3). Thus, when blocks are analysed, only major variants of motifs (and more seldom, of names) are considered: e.g., those dividing blocks into different types, or those that correlate with certain blocks (or other building units) preceding or following the block in question. An example is in the most frequent PMÞ block named *Sat ég undir fiskihlaða* (I sat under <a> fish stack). Close to the end, there is the motif *Sankti María gaf mér sauð* (<the> Virgin Mary gave me a ram), accompanied by either *það varð mér að miklum auð* (it turned out to be big wealth for me) (as in Holm. Papp. 64 fol., 99v) or *síðan lá hún steindauð* (then she lay stone-dead) (sic) (as in DFS 67, 250r). This is a significant distinction, correlating with different motifs in the beginning of the block—and, even more important, with different subsequent blocks. If *Sat ég undir fiskihlaða* has the motif *það varð mér að miklum auð* (allocated the letter x), it is usually followed by the block *Sofa, sofa hjónakornin bæði* (<They>

sleep, sleep, both husband and wife); but if *Sat ég undir fiskihlaða* has *síðan lá hún steindauð* (w), then *Kona mín í kofanum* (My wife in the hut) is usually the next block in the sequence (cf. Figure 4, Section 4.1). Both *það varð mér að miklum auð* (x) and *síðan lá hún steindauð* (w) qualify as motifs; however, they do not occur in PMÞ independently of *Sankti María gaf mér sauð* (v), which gives a reason to address x and w as variants in the compound motif "vx/w" or motif complex "vx/vw". This is a case when motif variants would be taken into account while analysing a block. On the other hand, variants like *hún var stokk- og steindauð* (she was [tree-]stock- and stone-dead) (as in AM 969 4to, 46v), although significant in their way as well, will be considered at later stages (Section 3.3–3.4).

3.2 Step 1: Identifying Most Common Variants of PMÞ Blocks

In Step 1, the whole corpus of PMÞ under consideration is reviewed in order to identify the texts containing the most typical textual variant(s) of each of the roughly 50 most frequently occurring blocks in PMÞ. This will result in a core selection, representing each of the block (sub)types ("Corpus A"). The procedure is as follows.

Starting with (I) the whole corpus of PMÞ texts, and (II) the list of 50+ most frequent blocks types and subtypes (cf. Yelena Sesselja Helgadóttir 2020, pp. 314–395; the blocks are additionally sorted by frequency):

1. If Block 1 on the 50+ list has no subtypes, proceed to (3).
2. If Block 1 has subtypes, identify the most frequently occurring subtype of Block 1, designating it as Block 1:1.
3. Identify all PMÞ texts containing Block 1 / Block 1:1.
4. Identify the most frequent variant of Block 1 / Block 1:1.
5. Identify the PMÞ texts containing this variant of Block 1 / Block 1:1.
6. Identify the oldest of these texts (the chronological aspect is given consideration here).
7. Tag that oldest text—containing the most frequent variant of Block 1 / Block 1:1—as part of Corpus A, representing there Block 1 / Block 1:1.
8. Tag all other texts, containing the most frequent variant of Block 1 / Block 1:1, as part of "Corpus A*" (needed for a later stage, see Section 3.4), representing there Block 1 / Block 1:1.
9. If Block 1 has other subtypes, return to (2) and proceed with Block 1:2 (1:3, etc.) until all subtypes of Block 1 have been analysed.
10. If Block 1 has no other subtypes, return to (1) and proceed with Block 2 (3, etc.) until all blocks on the 50+ list have been analysed.

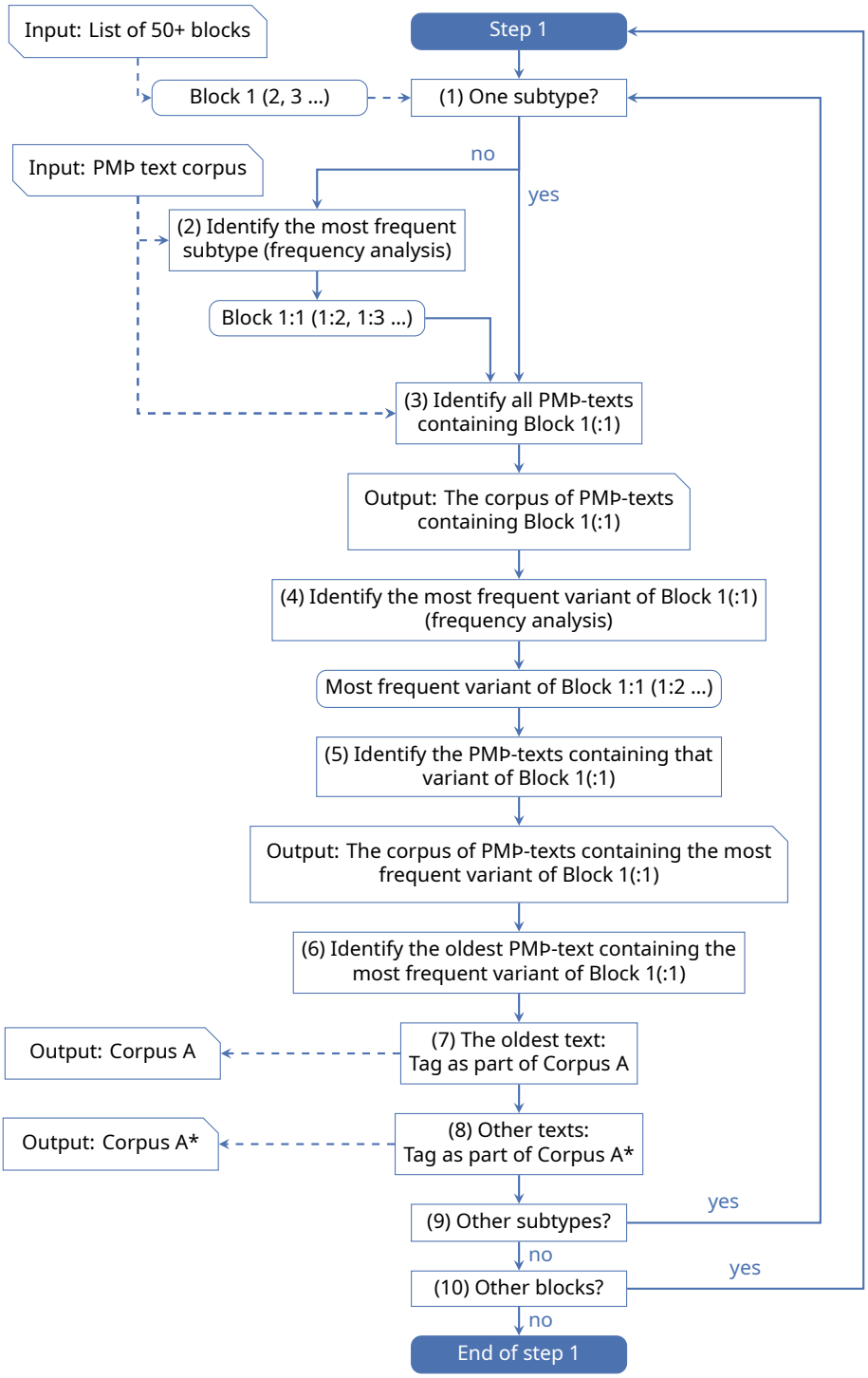

Figure 2: Flowchart for Step 1: Selecting texts representing block (sub)types

The procedure described here can also be presented as a flowchart (Figure 2), where simple connectors show the input data for next operation cell, while arrows can both point at the next operation and show input data.

Upon completing this procedure for all the blocks on the 50+ list, the texts in Corpus A are reviewed. Texts tagged as representing more than one block are identified and their ratio in Corpus A is determined, as one of the aims of the project is evaluating possible economy in the number of texts in the (final) corpus.

In addition to the core selection of oldest texts, representing each of the block (sub)types (Corpus A), this analysis identifies texts–other than the oldest ones—also representing their respective blocks (Corpus A*).

3.3 Steps 2–4: Identifying Most Common Variants of Essential Motifs, Names, and Block Sequences

In Steps 2–4, similar procedures are used for identifying the most frequent variants for other building units of PMÞ: essential motifs and combinations of names, on the lower level, and block sequences, on the higher level. For each of these units, the whole corpus of PMÞ under consideration is reviewed in order to identify the texts containing the most typical textual variant(s) of each of the units listed above. This will result in three core selections, representing each of the aforementioned (sub)types of building units: Corpus Bn (*n* stands for *names*), Corpus Bm (*m* = *motifs*) and Corpus Bs (*s* = *sequences*), as well as in three additional corpora containing other representative texts than the oldest ones: Corpus Bn*, Corpus Bm*, and Corpus Bs*. Then each corpus is reviewed; texts, tagged as representing more than one respective building unit, are identified and their ratio in the respective corpus determined. Texts that are also tagged as "Corpus A" are identified and their ratio in the corpora Bn, Bm, and Bs is determined.

3.4 Steps 5–7: Updating Corpus A

In Steps 5–7, the output of Steps 2–4 (Corpus Bn, Corpus Bm, and Corpus Bs) is compared to Corpus A, and Corpus A is updated with non-repetitive texts from the corpora Bm, Bn and Bs in order to maximise the number of essential motifs, name lists and block sequences represented in the corpus that is sought for. The procedure is as follows.

Starting with Corpus A and Corpus Bn:

1. If Text 1 (T1), representing Name 1(:1) or Names' Combination (NC) 1(:1) in Corpus Bn (i.e., the oldest text containing the most common variant of Name 1 / NC 1 or its most common subtype), also belongs to Corpus A, tag T1 as representing Name 1(:1) / NC 1(:1) and proceed to (7).

2. If Corpus A does not have T1, but has another text, containing the most frequently occurring variant of Name 1(:1) / NC 1(:1), tag the respective text in Corpus A as also representing Name 1(:1) / NC 1(:1) but not being its oldest representative. Proceed to (7).

3. If Corpus A has no text representing Name 1(:1) / NC 1(:1), then examine whether T1 also belongs to Corpus A* as a representative (albeit not oldest one) of any block (Block X). If not, tag Name 1(:1) / NC 1(:1) in Bn as unrepresented (adding it to Corpus A can still be considered at a later stage, cf. Section 3.5). Proceed to (7).

4. If T1 belongs to Corpus A*, examine whether T1 is inferior as a representative of Block X (structure-wise) than the text currently representing Block X in A. If T1 is inferior, tag Name 1(:1) / NC 1(:1) in Bn as unrepresented (cf. Section 3.5). Proceed to (7).

5. If T1 is not inferior structure-wise, the two texts are compared and factors such as their age and whether they represent other building units are evaluated. Based on this analysis, and provided that moving Block X's current representative to Corpus A* will not affect other units possibly represented by the text in question, T1 might be tagged as belonging to Corpus A—and the other text, as belonging to Corpus A* (with tag "A*<A" + represented building unit(s) ID). Proceed to (7).

6. If T1 is not tagged as belonging to Corpus A, tag Name 1(:1) / NC 1(:1) in Bn as unrepresented (cf. Section 3.5). Proceed to (7).

7. Return to (1) and proceed with Text 2 (3, etc.) until all names / NCs from Bn and their respective subtypes have been analysed.

For a visual presentation of the procedure above, see Figure 3.

Upon completing the above procedure, the ratio of names tagged as "UN" (i.e., unrepresented in Corpus A) is determined. The same procedure is then used to update Corpus A with relevant texts from the corpora Bm and Bs in Steps 6–7, ensuring that as few building units as possible are left unrepresented. Depending on time schedule of the project, repeating the procedure for units other than blocks (i.e., working with the corpora Bn*, Bm*, and Bs* instead of Corpus A* in Figure 3) can be considered.

3.5 Steps 8–9: Refining Corpus A

Up to Step 8, we have only been adding to Corpus A. In Step 8, the updated Corpus A is refined in an effort to decrease the number of texts without losing the representativity of the corpus. The procedure is as follows.

1. If Text 1 in Corpus A has more than one block, examine whether T1 is also in Corpus A* as a representative (not oldest) of its 2nd (3rd, etc.) block. If it is not, proceed to (5).

2. If it is, examine whether T1 is inferior as a representative of its Block 2 (structure-wise) than the text currently representing Block 2 in Corpus A. If it is, proceed to (5).

3. If T1 is not inferior, then T1 is compared with the text currently representing Block 2 in Corpus A (as in operation (5), Section 3.4).

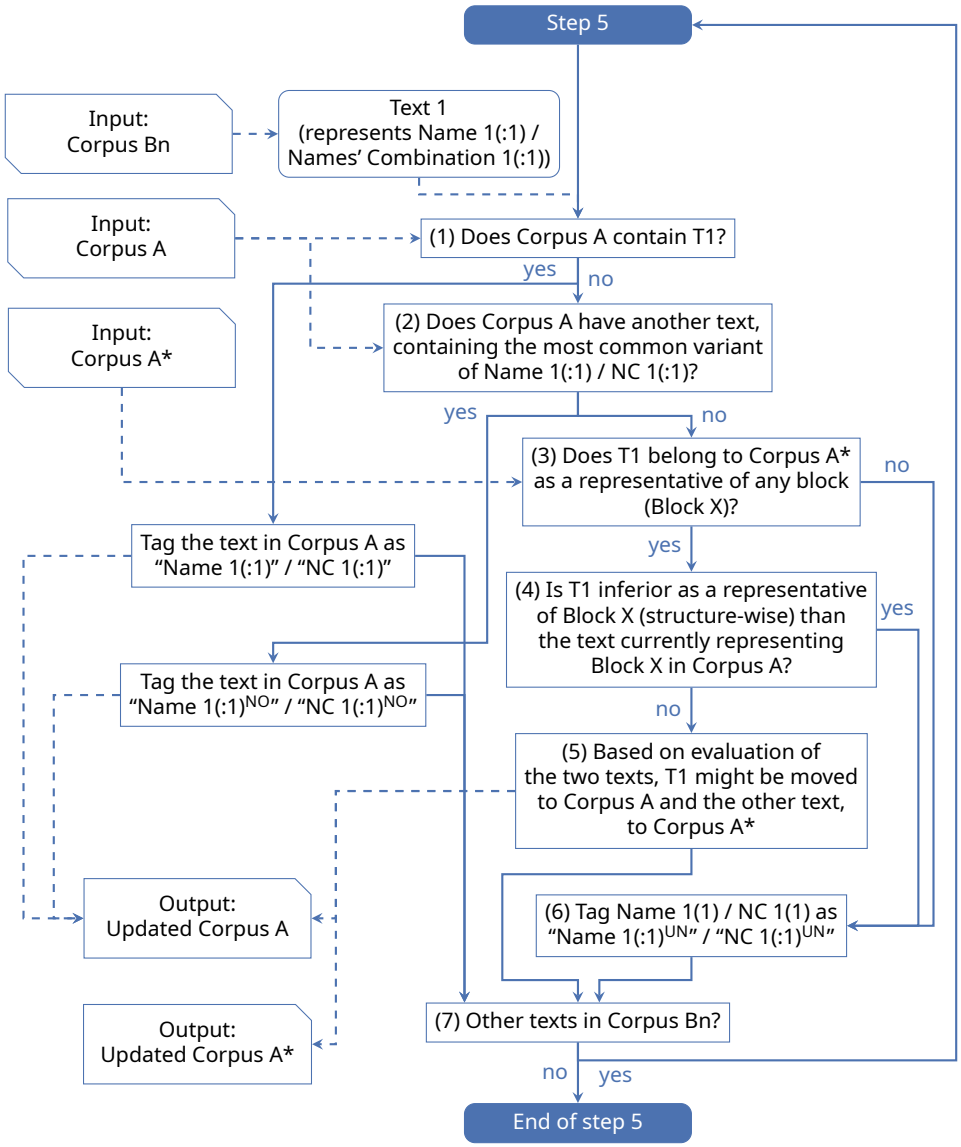

Figure 3: Flowchart for Step 5: Updating Corpus A from Corpus Bn

4. Based on this comparison, and provided that moving the current representative of Block 2 to Corpus A* will not affect other units that it possibly represents, T1 might be tagged as also representing Block 2 in Corpus A, while the other text is tagged as belonging to Corpus A* (i.e., "A*<A" + represented building unit's).

5. Return to (1) and proceed with next Block 3 (4, etc.) or Text 2 (3, etc.).

Upon completing the above procedure, the ratio of texts that were removed from Corpus A is determined with regard to the question of potential economy in the number of texts.

Depending on time schedule of the project, repeating the procedure for units other than blocks (i.e., working with the B-corpora instead of A-corpora) can be considered. In a project with a tight time schedule, examining only those texts in Corpus A that are already tagged as not oldest representatives of other units and those texts in B-corpora that are tagged as unrepresented can be considered. On the other hand, if time permits, it may be useful to review all texts in Corpus A* and B-corpora, with the view of substituting (occasional) less representative texts in Corpus A, provided that this would not affect other units represented by the texts in Corpus A.

In Step 9, the resulting Corpus A is studied for its representativity in terms of factors other than the structure of PMÞ, and the corpus is further refined. The questions are whether Corpus A is balanced in terms of the texts'

1. age: before 1900 vs. after 1900,

2. provenance: how well different regions of Iceland are represented,

3. source type: manuscript vs. voice recording,

4. folklore collection: how equally major collections are represented.

If the corpus is not balanced, ways to remedy this are considered, such as adding extra texts to Corpus A or substituting texts in Corpus A with other texts (for example, from Corpus A*) that are structure-wise not inferior as representatives for the block and other building units in question than the text to be replaced.

If the ratio of PMÞ block sequences, motifs, and names/NCs that still remain unrepresented in Corpus A is high, the ways to remedy this are considered. It is important to determine how many texts would then have to be added to Corpus A (noting that texts in B-corpora potentially represent two or more motifs that are yet unrepresented in A).

Finally, with time and size of Corpus A permitting, those texts that are neither in A- nor B-corpora ("Corpus C"), can be examined for rare variants in order to increase representativity of the final Corpus A.

4 Discussion

4.1 Methodological Considerations

In this section I will concentrate on the process of text selection, largely leaving aside the numerous problems of the preceding analysis and the encoding of each PMÞ text's structure, such as finding the subtle line between a compound motif and a complex of motifs, a complex of motifs and a small block, etc. in everchanging folklore texts (cf. Yelena Sesselja Helgadóttir 2020, pp. 179–185, 203–211).

Selecting the most representative text(s) of a block is seldom problematic, even when the block has numerous subtypes. For instance, *Sat ég undir fiskihlaða* (I sat under <a> fish stack), mentioned in Section 3.1, has four subtypes (cf. Figure 4), as well as "Ættartala" ("Genealogical list") (the second block in Table 1, Section 2) and *Ekki heiti ég Eiríkur* (My name is not Eiríkur), which often precedes "Ættartala" (however, not in Table 1). Rather, a problem can arise in blocks with minor and somewhat dispersed variation, not splitting easily into subtypes, such as *Kom ég þar að kvöldi* (I came there in <the> evening) or *Konan mín í kofanum* (My wife in the hut) (closer considered later in this section). It is debatable which would be more in keeping with the spirit of the method: using even minor textual differences to divide the block into subtypes, or considering virtually all its texts—apart from those containing very specific variants—as representing the block in question, although its texts would still be quite different. Following the working rule that sub-unit variants are generally not taken into account in the analysis of units (but considered at a different stage of the project), I am inclined to view all texts as representatives of the respective block if all the block's motifs/names are in place and in absence of clear distinctive features.

Most other cases that pose problems appear to be due to difficulties in discerning between (sub)types of building units or between two or more close types of units. On the block level—the higher structural level of PMÞ—which I am currently working on, a block participating in two (or more) different subtypes of the same block sequence can be problematic, as can an independent block which sometimes is a part of a block sequence and sometimes not. Examples of both cases are in the sequence *Sat ég undir fiskihlaða* (S in Figure 4). The block *Kona mín í kofanum* (C) is sometimes a part of the block sequence subtype "SC", but sometimes part of another—far less numerous—subtype of the same sequence, together with three short blocks (all or some of them) that I designated for simplicity as "I", "Í" and "J": "SCIÍJ". As both these combinations start with "SC", it is not obvious whether these are two distinctive subtypes of the sequence or whether they should be viewed as one subtype (and its subsubtype)—and therefore whether the text corpus underlying the analysis of the subtype "SC" should include texts containing "SCIÍJ" (cf. particularly operations (2–3), described in Section 3.2, and Step (4), Section 3.3). Needless to say, the most frequently occurring variant—and thus the whole result—could depend on this.

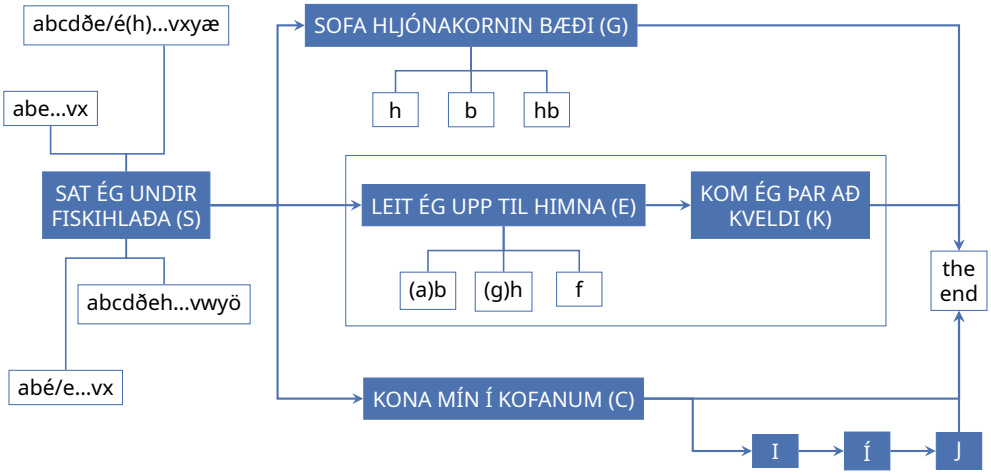

Figure 4: The structure of the *Sat ég undir fiskihlaða* sequence

The block *Kom ég þar að kvöldi* (K) is found in PMÞ texts both independently and as a part of several different sequences—among others, *Leit ég upp til himna* [I looked up to the skies] (E) (Figure 4). Besides, it is often the closing block in PMÞ texts starting with *Sat ég undir fiskihlaða* (usually with *Leit ég upp til himna* in between, but not always). Among several ways to handle this variability is viewing "S+(E)+K" as a subtype of the sequence *Sat ég undir fiskihlaða* ("SEK") or as a combination of block sequences, "S EK" (as in Yelena Sesselja Helgadóttir 2020, p. 392). The "S EK" way appears to be preferable, as it helps to avoid interpreting "S+(E)+K" as a very rare—probably unique—case of an independent block sequence which can also be a part of another block sequence.[10] But then, the analysis of the sequence *Sat ég undir fiskihlaða* lacks all texts containing K and E, as technically they belong to a different sequence,—albeit very closely related in oral tradition. Therefore, the "SEK" possibility deserves consideration, although it involves structural units of the same type tucked into each other—which is an issue that a position should be taken on: while exceptional on the level of blocks and sequences, this issue is almost usual on the lower level of PMÞ structure.

4.2 First Results on Representativity of Structural Units and Economy in the Number of Texts

When blocks that belong to the two largest sequences of the whole corpus of PMÞ have been analysed, there are reasons to be optimistic about possible economy in the number of texts in the final corpus. At least on the higher level of PMÞ structure, a PMÞ text, composed of several blocks, often appears to be representative of more than one block and/or (sub)type of the respective sequence. The oldest representative texts of the blocks—and apparently of their

[10] Cases like "S K"—which are not very numerous—can be interpreted similarly, but with E missing (although it is unusual for the head block of a sequence to be missing).

subtypes as well—also represent the main subtypes of the sequences, which makes unnecessary updating Corpus A with texts representing the sequences (cf. Step 7, Section 3.4).

Texts that are the oldest representatives of both their respective sequences' (sub)types and of each of the sequence's blocks are quite rare. More often, a text which is representative of all the units above is only the oldest representative for some of them. If the texts' age is disregarded, most of the blocks in the two sequences in question have a text that is also representative of the respective sequence (sub)type *and* of each block in the sequence. It could therefore be considered to disregard the texts' age, at the very least in those cases when the time difference is small—which is often the case, as the majority of the texts comes from the few folk poetry collection campaigns in Iceland.

When block subtypes are taken into consideration, they do not necessarily have a matching representative text in *each* subtype of other blocks (even if the texts' age is disregarded). However, in ca. two-thirds of cases there will be a text representing one (sub)type of each of the blocks and one (sub)type of the sequence, which is more than was expected.

Further research will tell whether these results will hold for all blocks and sequences on the higher level of PMÞ structure and how they will interact with its lower level.

5 Conclusion

In spite of some controversy (Section 4.1), testing the text selection method based on the typology of building units of PMÞ (described in Section 2–3) has so far shown that it is applicable and useful for selecting PMÞ texts representative of the structure of the genre. The method has few drawbacks as far as the higher level of PMÞ structure is being analysed.

A text that is representative of the sequence subtype and of each of its blocks is only in some cases the oldest of the texts that represent the units in question, and if the texts' age is regarded as crucial, it can be difficult to achieve substantial economy in the number of texts in Corpus A. On the other hand, first results show that if the requirements on the age of texts are reasonably relaxed—as can be easily justified—then there are texts representative both of the sequence subtype and of each of its blocks in a large majority of cases. In such cases, structure could be systematically given priority over chronology to achieve economy in the number of texts in Corpus A without losing the corpus' representativity structure-wise. Preliminary results thus show not only that the suggested method is practicable, but also that the economy in the number of texts is considerable and the ratio of block sequences, not represented in the main corpus, is fairly low, therefore supporting my hypothesis.

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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

[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

[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

[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) meghagyák (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 (Ad) roppanának (V)
Az (A) törökök (N) mind (Pr) Allát (N) kiáltának (V),
Az (A) magyarok (N) mind (Pr) Jezust (N) kiáltának (V).

Két (NN) fél (N) öszve (VP) erősen (Ad) 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 alítják 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

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 **mását nem** láttam, **melynek mását** 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).

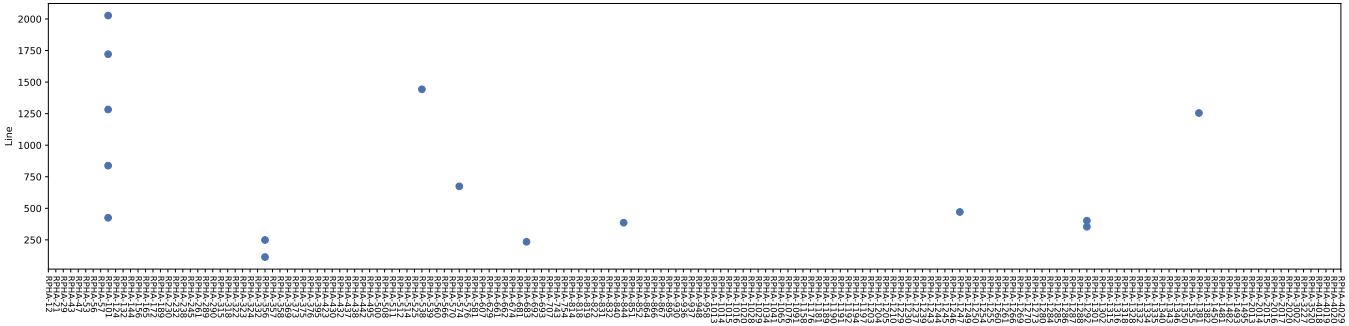

Figure 1: Word collocations “Dob” (“drum”) and “Trombita” (“trumpet”). Horizontal axis poems; Vertical axis length (in lines); points word collocations

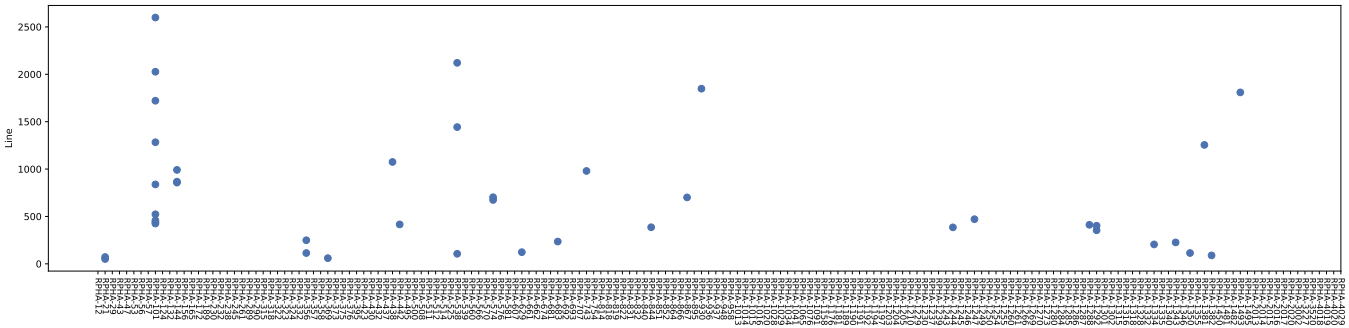

Figure 2: Lemma collocations “Dob” (“drum”) and “Trombita” (“trumpet”). Horizontal axis poems; Vertical axis length (in lines); points lemma collocations

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** ők 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** bé**jutának**,	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** be**jutának**,	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** be**jutának**,	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 városához **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 strophe 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 unequivocal 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

[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.	Anonymous-369	12	Ilosvai-692	14	Ilosvai-692	34	Ilosvai-692	61	Ilosvai-692	112
6.	Ilosvai-692	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	30	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
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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.

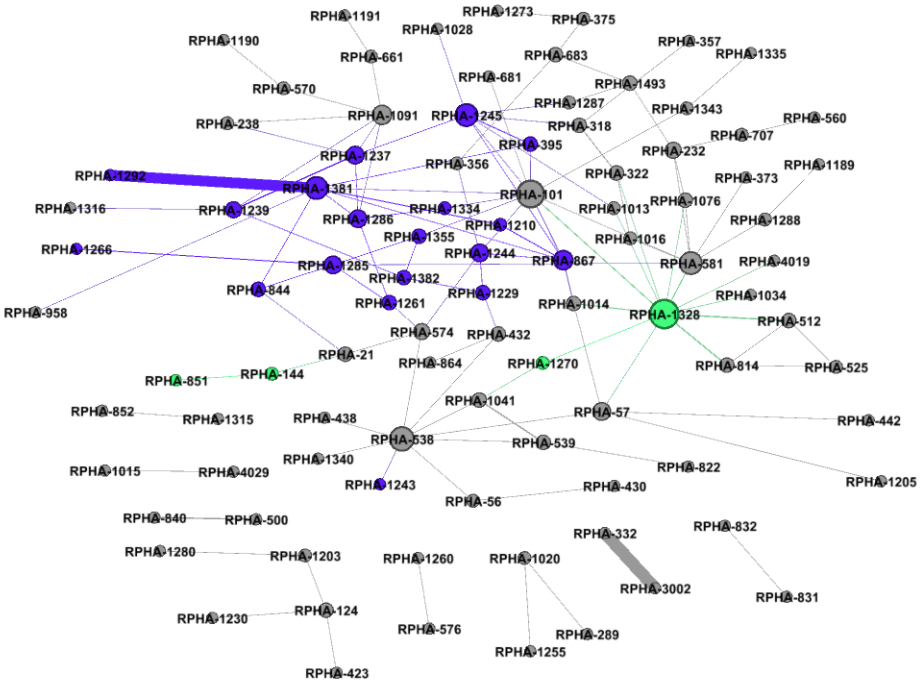

Figure 3: Network of Hungarian historical songs connected by at least one shared line. Nodes represent individual poems; edges indicate line-sharing between poems at cosine distance 0.1. Blue: poems by Tinódi. Green: poems by Valkai.

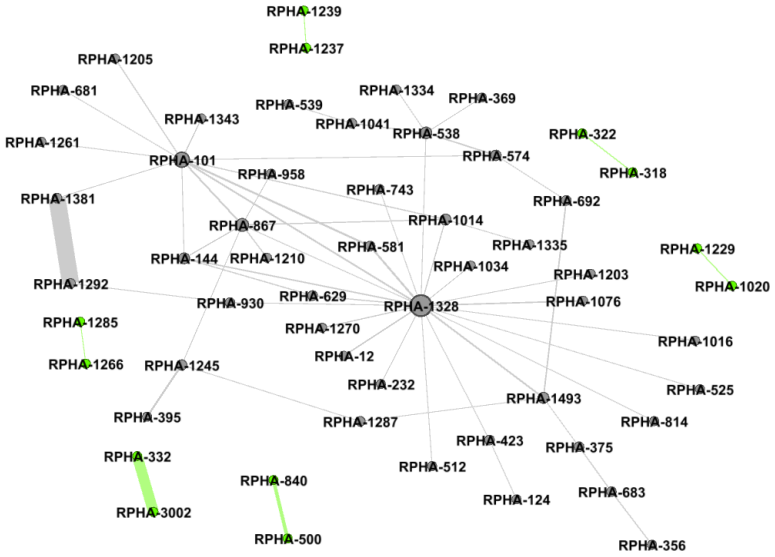

Figure 4: Network of Hungarian historical songs connected by shared lines. Nodes represent individual poems; edges indicate at least three shared lines between poems at cosine distance 0.2. Green: single pairs.

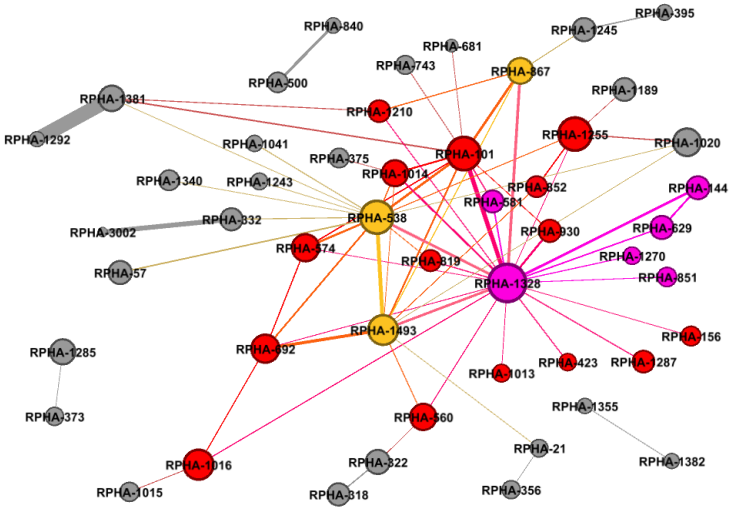

Figure 5: Network of Hungarian historical songs connected by shared lines. Nodes represent individual poems; edges indicate at least eight shared lines between poems at cosine distance 0.3. Pink: texts by Valkai; Red: adjacent to Valkai's *Genealogia historica regum* (*RPHA* 1328); Yellow: poems by Cserényi (*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.

[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

[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 szegénséget 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 neked 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.

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Constructing a TIMBRE Database: Handling the Reuse of Popular Tunes

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Abstract

More than 3000 tune names have been collected in order to build the TIMBRE database from a corpus combining French vaudevilles (short plays interspersed with sung parts) and French songs by Béranger and Jouy printed in the 19th century. These tunes have the particularity of being popular tunes reused to set new texts to music, and therefore have a particular name in French: *"timbre"*. This paper aims to trace the construction of the database and to study the use of these *timbres*, their composer, original genre and vitality, by alternating close and distant reading methods. One of our major results pertains, for instance, to the identification of the important role played by new tunes composed for vaudeville in the establishment of new *timbres* in the first part of the 19th century. Nevertheless, the reuse of these new tunes composed for vaudeville seems to decrease considerably at the end of the 19th century, as shown by the study of Jules Jouy's song production.

1 Introduction

The practice of so-called *timbre* in French consists in reusing a well-known tune to set new texts to music. It is a centuries-old strategy that helps the memorisation of new songs and their diffusion. It is particularly characteristic of the French vaudeville plays of the 18th century and the first part of the 19th century, when the vaudeville was a popular dramatic genre combining prose and sung verse, the latter called *"couplets"* (Gidel 1986). *Timbres* could also be found in French popular songs frequently sung to well-known tunes. In the second half of the 19th century, however, the practice of *timbre* in songs gradually disappeared and was replaced by compositions based on original music (Cheyronnaud 2009, p. 4). The use of *timbres* is almost always indicated in the printed versions of vaudevilles or songs with the word *"Air"*, located above each versified section meant to be sung.

This tradition of naming the tunes lends itself to the gathering of a large and consistent dataset, which can be organised in a database. Although specialists

know the phenomenon of singing to well-known tunes, corpus mining on a large scale, using statistical methods, is yet to be made. In this paper, we shall describe first the building of a database called TIMBRE, based on two different corpora that were chosen because of their emblematic use of *timbre* and therefore strongly linked; one corpus of vaudevilles from 1830 to 1832, and one corpus of songs, itself separated into two sub-corpora: songs of Pierre-Jean de Béranger from the first half of the 19th century, and songs written by Jules Jouy in 1887.[1] Secondly, we shall compare these corpora through a mix of distant and close reading. The selected periods bring insight into two significant moments in the history of *timbre*: a period of massive use (the first half of the 19th century) and a period of gradual disappearance (the last quarter of the 19th century). As a prominent song-writing figure who greatly influenced the popular music in the 19th century, Béranger serves us here as a bridge connecting the vaudeville genre with the work of another significant songwriter from the end of the century, Jules Jouy. The latter is representative of the song tradition of café-concert[2] and cabaret at the end of the century. The study of Jules Jouy's works allows us to observe the later use of certain tunes, their survival in a different production framework and thus serves as the final chronological marker in our study. This article aims to acquire a precise knowledge of the tunes in our corpora (earliest names, composers) and to explore how these tunes are reused and imported through different sung genres over a long period of time.

2 Constitution of our Digital Corpora, Tune Listings and Standardisation

For the vaudeville corpus, we selected 124 printed plays first performed in Paris between 1830 and 1832 (as indicated by the original editions), adding up to around 2,600 couplets.[3] For the song corpus, we chose a collection of Jouy's songs titled *Les Chansons de l'année 1887* (Songs of Year 1887) and published in 1888 by Bourbier and Lamoureux, containing about 200 songs, and two volumes of Béranger's songs (*Oeuvres de P. J. De Béranger*; The Works of P. J. De Béranger) published by Perrotin in 1867 comprising a little more than 300 songs. The digital versions of these vaudeville acts and songs mainly come from the online library Google Books, as well as from Gallica.[4] Their content was stored in plain text, corrected, and then tagged using XML.[5] The tag <stage

[1] The vaudeville corpus is part of the corpus created by Lara Nugues for her PhD research. The song corpus was compiled by Dr Nils Couturier. Both corpora were built in the framework of the SNSF PRIMA project, *Le Rire des Vers* / Mining the Comic Verse, directed by Professor Dr Anne-Sophie Bories.

[2] "A place of entertainment, serving food and drink, where songs were performed by professional musicians. The term came to encompass a whole style of French popular song" (O'Connor 2001).

[3] It would be tedious to list all vaudeville plays included in the corpus. However, it should be noted that they are mainly plays written by Brazier, Bayard, the Cogniard brothers, Desvergers, Dumersan, Duvert, Mélesville, Masson, Saintine, Scribe, Simonnin or Vanderburch.

[4] Gallica is the Digital library of the French National Library (https://gallica.bnf.fr/).

[5] Our corpus was tagged according to the standards defined for the SNSF PRIMA project *Le Rire des vers* / Mining the Comic Verse. For each work, a header was created, including notably the name(s) and surname(s) of the author(s) and the title of the work. As for the body of the texts,

type=”tune”> was defined to mark tune names, which were then extracted and converted into Excel lists. For the Jules Jouy corpus, only the songs whose tune is indicated in the collection were processed.[6] For the vaudeville, all the tunes accompanying the sung text were tagged. We did not tag, for instance, the tunes that accompanied character actions or scene changes. According to this methodology, the vaudeville corpus thus contains 2612 “tune” tags, the Jouy corpus 144, and the Béranger corpus 335. Once this listing had been carried out, assigning a standard tune name to the various namings of the same tune proved necessary. Indeed, the same tune names occur to be spelled in different ways, present printing errors, slight variations in its denomination or even be known under several different names. Standardising these tune names is therefore a crucial step in ensuring the interoperability of our corpora.

The fact that a tune changes its name in the course of its history is a relatively common phenomenon which requires special investigative work. Indeed, an original tune, also called in French *“timbre primitif”* (earliest *timbre*) or *“vrai timbre”* (true *timbre*), when employed several times, can change its designation by adopting as a new name the first line of its new text. In this case, the tune is called a *“faux timbre”* (false *timbre*). A true *timbre* can thus have multiple false *timbres* depending on the history of its reuse and its successive renamings.[7] Our main source to carry out this genealogy was a book well known to tune specialists, *La Clé du Caveau* (literally The Key to the Vault) by Pierre Capelle, whose title refers to *“Le Caveau”* (The Vault), a famous French singing society. This printed publication consists in a tune’s collection structured like a database and featuring multiple entries. Thus, it enables the tracing of various potential names associated with a tune, allowing us then to determine its earliest name and access its corresponding score. *La Clé du Caveau* gained significant popularity upon its first release[8] and expanded its collection of tunes from 891 to 2,390 in subsequent editions (Benini 2021, p. 269).[9] The fourth edition introduced a composers’ table, providing details about the genre, composer, and sometimes the titles of the works from which the earliest tunes originated. However, not all tunes used in vaudevilles or songs are included in *La Clé du Caveau*. To complete our inventory, we consulted other materials such as *Le Catalogue de la chanson folklorique française* (The Catalogue of French Folk Song) by Conrad Laforte (1983), specifically volume 6, which focuses on songs sung to *timbres*.

only the elements that interested us, namely the tunes and the verses, were marked. The tags used generally follow the XML-TEI naming conventions. The web application `xml-generator`, created by Petr Plechač, was used for tagging. For the vaudeville corpus, this work was carried out with the help of Pascaline Loricourt and Timothy Klaffke, and to a lesser extent with the help of Louis-Geoffrey Gousset.

6 Though the songs in this collection were indeed published, the exact conditions of their vocal performance remain difficult to establish. As concerns the songs without *timbre* indicated, it is difficult to know to which music they were sung, if they were sung at all.

7 All these concepts were developed by Pierre Capelle in *La Clé du Caveau* (Capelle 1848, pp. xii–xiii).

8 We can explain this success by the fact that *La Clé du Caveau* was a useful tool for songwriters and playwrights to compose songs. Furthermore, as Capelle explains, it enabled composers and playwrights from the rest of France to keep up to date with the tunes in fashion in Paris, without having to be in the capital (Capelle 1848, pp. xii, xiv).

9 However, these additions are accompanied by deletions of tunes. See for example the foreword of the fourth edition, Pierre Capelle deletes 150 tunes and adds 470 (Capelle 1848, p. xv).

3 Difficulties of Standardisation

Tunes are usually named after the first line of their original lyrics, either completely or partially. Occasionally the name comes from a refrain line and in very rare cases from the character singing. *La Clé du Caveau* helps trace back the tunes concerned to their "earliest *timbre*" in most cases. However, there are challenging instances, for instance *"Air de Lantara"* (Air from *Lantara*). This tune refers to a tune from the vaudeville play *Lantara, ou Le Peintre au cabaret* (*Lantara, or the Painter at the Cabaret*), but it's quite difficult to determine the specific tune being referred to according that there are multiple tunes in this vaudeville play.

Furthermore, there is a series of tunes that are impossible to identify by name, partly because their designation is vague: *"air connu"* (Known Air), *"air suisse"* (Swiss Air), etc. There are also cases where a tune lacks a name and is simply labelled with the French term *"Air"* or has no mention at all, despite being sung. To account for these particular cases in our corpora, we introduced a second attribute to the <stage> tag (<stage type="tune" id="">), assigning the first verse of the unnamed couplet or the first line of the refrain (where applicable) as the value for this second attribute (id).[10] This approach allows us to identify these unnamed tunes, and sometimes reveals connections with other tunes. We applied the same process to newly composed tunes (i.e., those created specifically for the occasion). This method enables us, for example, to keep separate record for the different instances of *"AIR nouveau de Doche"* (New Air by Doche), each designating a distinct tune, and to trace their subsequent reuse.[11]

4 Metadata, Bias and Data Control

We associated two types of metadata to our standardised tune names: the original genre of the tune (such as romance[12] or drinking song) and the composers' surnames and first names, when available. We obtained this information primarily from the fourth edition of *La Clé du Caveau*, but we also consulted other sources to establish attribution (Baudouin 1884; Choron and Fayolle 1817; Doche 1822; Fétis 1866–1868, 1878–1880; *Revue musicale / Revue et gazette musicale de Paris* 1827–1880; Halévy 1861; Quérard 1842–1857), as well as data from the catalogue of the French National Library (BnF). When sources provided contradictory information regarding the original genre or the composer, we refrained

[10] For the Jouy corpus, a different methodology was adopted, see Section 2.

[11] It should be pointed out here that, contrary to its common definition, vaudeville is not a play containing exclusively verses sung to already known popular tunes—even if it does contain most of them. Sometimes vaudeville also contains couplets sung to new music created especially for the occasion. However, the expression *"air nouveau"* (New Air), which appears in vaudeville editions, is sometimes misleading. It does not necessarily mean that the tune has been composed for the occasion, but it may also refer to a recent and trendy tune composed by a well-known composer such as Amédée de Beauplan or Pauline Duchambge for example.

[12] "In France and Germany the term came to indicate an extravagant, sentimental or 'romantic' tale in either prose or strophic verse. Since the 18th century vocal and instrumental settings entitled 'romance' have continued to express these 'romantic' and lyrical qualities [...]" (Sage et al. 2001).

from making a decision and did not include it in the metadata. Regarding genre metadata, we categorised anything related to plays that combined songs and were predominantly sung to well-known tunes as "vaudeville". For the remaining genres, we have generally followed the classifications given in the period editions.

A significant portion of tunes names in the vaudeville corpus (30.3%), Béranger corpus (28.36%) and Jouy corpus (18.06%) remains without an assigned composer. Likewise, a portion of the data in the vaudeville corpus (28.12%), Béranger corpus (8.96%) and Jouy corpus (5.56%) do not have an assigned genre. These figures should be considered when analysing our results. To ensure the interoperability of data and metadata, we used the Levenshtein 0.20.8 library in `Python` (Bachmann n.d.), which measures the similarity between strings through operations such as deletion, insertion and substitution. This allowed us to compare standardised tune names within and between our corpora, minimising inaccuracies and oversights. Another script was used to verify the consistency of associated metadata for each identical tune occurrence. These verification measures were crucial for enhancing the quality and validity of our data.

5 Overlap of Corpora and Influences

After completing the standardisation process, we measured the number of unique tunes in our different corpora.[13] The song corpus contains 276 unique tunes, with 81 from the Jouy sub-corpus and 195 from the Béranger sub-corpus. In the vaudeville corpus, there are 1,081 unique tunes.[14] We then compared the lists of unique tunes from the different corpora and sub-corpora. Between Béranger's and Jouy's song corpus, there are only a few shared tunes with just 8 unique tunes overlapping. This lack of continuity can be attributed to the smaller size of Jouy's corpus and the significant time gap between the composition dates of Béranger's successful songs and Jouy's cabaret songs in 1887. However, some tunes have remained in use, and their names indicate that the connection between the two songwriters is not coincidental. For instance, Jouy's song *"Les vieux"* (The Old People) has a false *timbre* titled *"Les gueux"* (The Beggars), named after Béranger's eponymous song originally composed on the earliest *timbre "Première ronde du Départ de Saint Malo"* (First *Ronde* from The Departure From Saint Malo). Béranger's song provides Jouy with a tune, but it also becomes a target. Jouy modifies Béranger's lyrics and uses them to criticise the old songwriters, transforming the hypocritical celebration of the

[13] An "unique tune" is to be understood as a "type" in opposition to the notion of "token".

[14] Herbert Schneider counted 220 tunes for Béranger corpus, but he used the edition of *Musique des chansons de Béranger*. He used exactly two versions of this edition, that of 1845 and that of 1856. It should be noted that from one edition to the next the number of tunes given for the same song varies. Thus, in the Perrotin edition (*Oeuvres de P. J. De Béranger*), which we use, only one tune is given for the song "Rosette" (*"Air nouveau par M. de Beauplan"* / New Air by Mr de Beauplan), whereas in the *Musique des chansons de Béranger* edition three tunes are given for this same song (*"Musique de M. Amédée de Beauplan"* / Music by Mr Amédée de Beauplan, *"Musique de M. Guichard Printemps"* / Music by Mr Guichard Printemps, *"Musique de M. Charles Maurice"* / Music by Mr Charles Maurice).

lower social classes (*"vive les gueux"*, long live the beggars), into a denunciation of its authors (*"à bas les vieux"*, down with the old people). He also criticises the type of song that promotes them. The songwriters of the *Caveau* are portrayed as *"rabâcheurs"* (wastrels), while Désaugiers is caricatured as a *"bourgeois"* incapable of understanding the true misery of the people. The migration of tunes is employed for irreverent parody and as an aesthetic-political statement: Jules Jouy promotes the "modern" song, even if he employs the same techniques as his predecessors, including the use of *timbre*. Despite the temporal distance and the ironic relationship involved, Béranger remains a reference diluted with Jules Jouy's eclectic borrowings.

Regarding the Jules Jouy corpus and the vaudeville corpus, they share a small number of unique tunes, specifically only 10. Moreover, unlike the connection observed between Jules Jouy and Béranger, this association seems rather coincidental. These shared tunes are well-known songs such as revolutionary songs ("The *Carmagnole*", "The *Marseillaise*") which are present in the Jouy corpus due to its political nature. There is also an old but widely known tune *"J'ai du bon tabac"* (I Have Good Tobacco), as well as vaudeville tunes that Jules Jouy did not directly borrow. For instance, the tune *"Le choix que fait tout le village"* (The Choice That the Whole Village Makes), composed by Joseph-Denis Doche originally came from a vaudeville written by Favart. However, Jules Jouy borrowed it from a later song by Paul Émile Debraux, known for its refrain *"T'en souviens-tu?"* (Do You Remember?). Jouy used this tune under the name *"Air : T'en souviens-tu ?"* (Air: Do You Remember?) in the collection *Les Chansons de l'année 1887*.

The vaudeville corpus and Béranger corpus share a significant connection. Béranger shares 72 unique tunes with the vaudeville corpus, which can be attributed to his immense popularity during the July Monarchy. While paying tribute to Béranger, vaudeville writers, often also driven by financial considerations, capitalised on his popularity by incorporating his songs and their tunes into their plays (see *Le Tailleur et la Fée* (The Tailor and the Fairy) (1831)) or by creating couplets based on Béranger's songs. For instance in the vaudeville play *Une nuit au Palais-Royal* (A Night at the Palais-Royal) (1830), the tune of *"La Sabotière"* (The Clog Dance) is used to compose a song whose metrical structure and the onomatopoeia (*"pan, pan"*) of the refrain are the same to Béranger's song *"La Fortune"* (Fortune), which is also sung to the tune of *"La Sabotière"*. The parody is obvious, as the edition of the vaudeville explicitly mentions the tune as *"Air : De la Sabotiére* [sic] *(Fortune de Béranger)"* (Air: The Clog Dance (Béranger's Fortune). Overall, vaudeville writers aimed to capitalise on popular tunes to ensure the success of their productions and Béranger did the same. However, popularity was not the only criterion for Béranger and the vaudeville writers. Strategic choices were also made on the basis of the song's form and themes (Leterrier 2013, pp. 49–50). Béranger was inspired by the same sources as the vaudeville writers, participated in the same singing societies and shared a common culture with them. This proximity led him to use tunes originally composed for vaudeville, such as Tourterelle's *"Il me faudra quitter l'empire"* (I Will Have to Leave the Empire) or *"À soixante ans, on ne doit pas remettre"* (At Sixty, One Should Not Put Off). The influence between the vaudeville genre and

Béranger seems reciprocal, each borrowing from and drawing inspiration from the other.

6 Origin of the Tunes and Key Composers

Regarding the classification of tunes according to their original genre, we established five main categories. The first category, called "vaudeville", encompasses tunes originally created for vaudeville. The second category, "song", includes all tunes composed specifically as standalone songs. By song we mean any text set to music in a non-dramatic, non-sacred setting. This category covers a wide range of genres such as romance, the drinking song and the political song. The third category, *"art lyrique"*, consists of tunes performed on stage with operatic voices. This category includes opera tunes, *opéra-bouffon* tunes, *opéra-féérie* tunes, *tragédie-lyrique* tunes and *opéra-comique* tunes. The fourth category, "others", comprises tunes that are difficult to classify or whose exact nature is often unknown, such as *"air anglais"* (English Air), *"air populaire"* (Popular Air), as well as tunes that don't fit into any other category like *"air de valse"* (Waltz Air), *"air de carillon"* (Carillon Air), *"air d'hymne religieux"* (Religious Hymn Air). Finally, the fifth category, "genres not assigned", groups tunes for which we don't have information about their original genre.[15]

Béranger's selection of tunes demonstrates his ability to transcend genre boundaries, as he draws inspiration from both the song genre and the vaudeville and *art lyrique* genres.[16] However the song genre serves as the primary source of tunes, as Béranger borrows from *Caveau* songwriters such as Laujon and Désaugiers, from composers of fashionable romances such as Beauplan, Romagnési, and Vimeux, as well as contemporary political "hits" such as Adolphe Vogel's *"Air des Trois Couleurs"* (The Air of Three Colours). It is worth noting that a significant portion of the song genre is also comprised of newly composed tunes specifically for Béranger's songs by composers such as Wilhem, Meissonier, Bérat and Karr. Furthermore, the data presented in Figure 1[17] confirm our assumption that Béranger relies heavily on vaudeville tunes as well. Approximately 27.16% of the tunes in the Béranger corpus are sourced from vaudeville, emphasising the strong connection between song and popular theatre (Schneider 1998, p. 114). These borrowings include tunes from vaudeville composers such as Doche, Tourterelle, Darondeau. On the other hand, *Art lyrique* plays a relatively smaller role, accounting for only 16.12% of the borrowings. Nonetheless, these tunes were created by renowned composers from the previous century such as Grétry, Dezède, and Méhul, as well as more contemporary and fashionable composers such as Boieldieu.

In contrast to Béranger, Jules Jouy's work exhibits an unbalanced distribution across genres (Figure 2). More than three quarters of tune names in

[15] See Section 4

[16] This is also a phenomenon that can be observed in the genre choices of the texts themselves, which borrow as much from the ode as from the romance or the drinking song (Leterrier 2013, p. 42).

[17] The graph, and all those that follow, were made using the Python Matplotlib library (Hunter and Team n.d.).

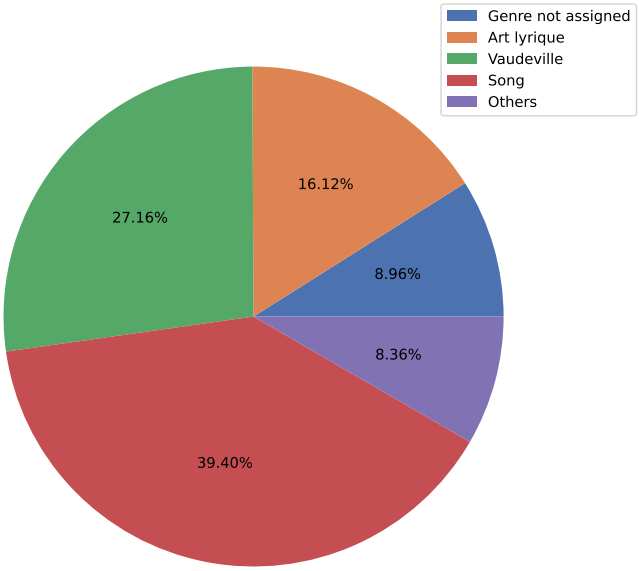

Figure 1: Original tune genres in the Béranger subcorpus of the song corpus

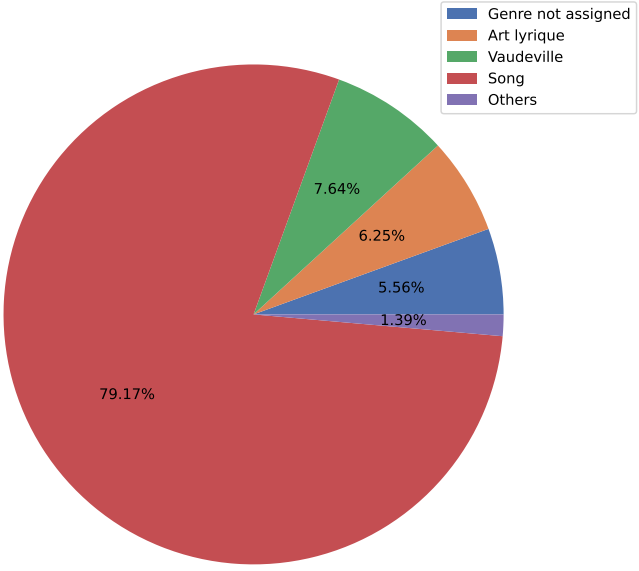

Figure 2: Original tune genres in the Jouy subcorpus of the song corpus

Jouy's work originate from the song repertoire. Jouy heavily relied on popular *café-concert* songs for his choices, drawing from successful composers such as Doria, Planquette and Pourny, as well as more traditional songwriters such as Colmance and Désaugiers. Interestingly, some of *café-concert* tunes come also from songs for which Jouy provided the lyrics, such as the tune by J. M. Rouvier composed for Jule Jouy's song *"Le bureau de placement"* (The Employment Office). Regarding vaudeville, there are some enduring classics by Joseph-Denis Doche that survived until the end of the century. However, as the genre of vaudeville with couplets had fallen out of fashion and gradually disappeared by the 1860s (Gidel 1986, p. 50), it no longer served as a primary source of cabaret production by the end of the 19th century. Borrowings from the *art lyrique* genre are even more limited, but one notable figure stands out: Jacques Offenbach. Jouy incorporated tunes from Offenbach's works such as *"La ronde du Brésilien"* (The *Ronde* of the Brazilian) from *La Vie Parisienne* (Parisian Life) and *"Air des deux hommes d'armes"* (Gendarmes' Duet) from *Geneviève de Brabant* (Genevieve of Brabant). The latter tune, added in the play's second version in 1867, achieved tremendous international success and was later adapted by the US Marine Corps as its official anthem (Raph 1986, p. 357).

When examining the vaudeville corpus in contrast to the Béranger and Jouy sub-corpora, we observe a significant borrowing from the *art lyrique* genre with 24.66% of the tunes coming from this repertoire.[18] This relatively high percentage can be attributed to the close relationship between vaudeville and *opéra-comique*, as both genres originated in the *"théâtres de la foire"* (fairground theatres). In the case of opera, there was a particular fascination with internationally renowned composers such as Rossini. A "Rossinimania" swept through Paris in the 1820s when the composer settled in the city and became the director of the *Théâtre Italien*, and this influence continued to affect vaudeville production in the 1830s.[19] Moreover, the tradition of opera parody, which had been prominent in the 17th and 18th centuries, remained widespread in the early 19th century. As a result, the vaudeville predominantly includes tunes from highly successful operas such as *La gazza ladra* (The Thieving Magpie) (Rossini), *Freischütz* (The Freeshooter) (Weber) and *Robert-le-Diable* (Robert the Devil) (Meyerbeer).[20]

The insightful information presented in Figure 3 highlights the significant presence of tunes composed specifically for vaudeville, accounting for 26.84% of the corpus. This suggests that vaudeville tunes may even be the primary source of tunes. However, since the percentages for *art lyrique* and vaudeville are very

[18] Literary and musical research generally agrees that *art lyrique*, and more precisely opera and *opéra-comique*, constitutes a significant reservoir of *timbre* for the production of vaudeville. The merit of our survey is, however, to evaluate this borrowing precisely, based on a sample of 124 plays.

[19] It is also called in French *"rossinisme"*. Catherine Authier studied this phenomenon in her 2007 contribution to the third congress of the *Société des études romantiques et dix-neuviémistes entitled "Le rossinisme : une composante italienne de la vie parisienne"* (see https://serd.hypotheses.org/la-vie-parisienne).

[20] The word "parody" is being taken in a broad sense (Le Blanc 2014, pp. 21–22, 547ff.). It should be noted that there is also a practice of opera and *opéra-comique* fragments in vaudeville, a rather rare phenomenon in our corpus but one which exists and which differs from the practice of *timbre* since there is an exact repetition of an extract of opera or *opéra-comique*.

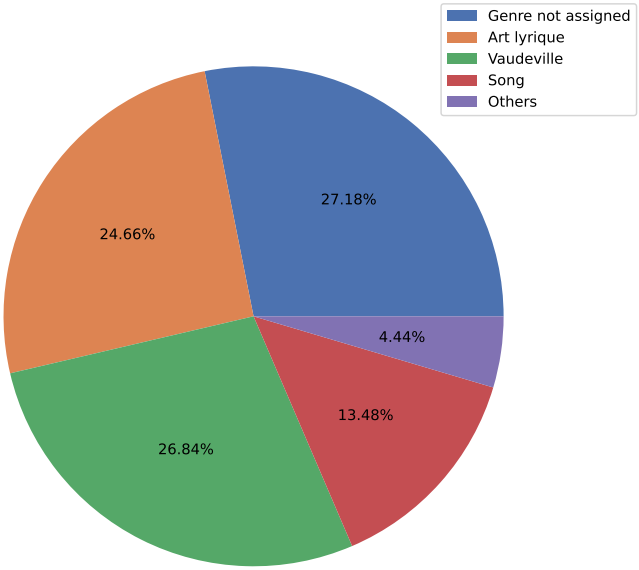

Figure 3: Original tune genres in the vaudeville corpus[21]

close (24.66% and 26.84%, respectively), and a relatively high percentage of tunes remains unassigned to a specific genre (27.18%), it is more appropriate to acknowledge both *art lyrique* and vaudeville as equally important sources for the vaudeville genre. These findings underscore the significance of these new tunes created exclusively for vaudeville; an aspect that has been largely overlooked in scientific research. The limited number of new tunes per play or their absence may explain the lack of interest in this area. But who composes these new tunes, and how can their use be explained? The main composer responsible for creating new tunes for vaudeville is Joseph-Denis Doche, a prominent figure in the world of song and theatre. Joseph-Denis Doche was a member of the *Caveau* and serves as a conductor at the *Théâtre du Vaudeville*. Other composers involved in crafting new tunes include Blanchard, Heudier, Piccini, Darondeau and Adam. All of them had roles as conductors, arrangers, or musicians in vaudeville theatres. Their close association with theatre directors, vaudeville writers, and their expertise in vaudeville music likely led to their involvement in composing new music for vaudeville productions.

In contrast, the song genre takes a clear third place as a source of tunes, contributing only 13.48% of the corpus, following *art lyrique* and vaudeville. Given that tunes from *art lyrique* or vaudeville were composed specifically for the stage, it can be assumed that certain of these tunes are more suitable for reuse in vaudeville than song tunes. This hypothesis finds support in Capelle's

[21] When the same tune was used several times in a vaudeville play, either for instance to repeat a refrain already heard, or to set new verses to music, it has been taken into account only once, so that it is not over-represented.

foreword to the fourth edition of *La Clé du Caveau* (Capelle 1848, p. xiv), where he explains that vaudeville writers, conductors and theatre directors requested additional tunes for choruses and to accompany the entry and exit of the characters in their dramatic productions. Unsurprisingly, the majority of tunes added by Capelle in response to their request were opera, *opéra-comique* and vaudeville tunes, rather than song tunes (Capelle 1848, pp. 193–208, VI & VII Division).

7 Tune Reuse and Hits

Not all tunes enjoyed the same popularity. Consequently, we were intrigued by the potential existence of "hits" within our corpus, referring to tunes that have achieved great success and have been reused extensively. The histogram depicted below illustrates the number of reuses on the x-axis (indicating the frequency of reuse, for example, once, twice, etc.), and the number of reused tunes on the y-axis (denoting the count of tunes are reused once, twice, etc.).

Figure 4 reveals that the majority of the surveyed tunes appear only once. The overall pattern indicates a declining trend, suggesting that very few tunes have attained widespread reuse to the point of becoming hits. However, within the vaudeville corpus, three tunes clearly stand out, having been reused in 26, 28, and 31 plays, respectively.[22] Let's focus on the tune that appears in 31 plays: *"J'en guette un petit de mon âge"* (I'm Looking Out for a Little One My Own Age). This composition by Joseph-Denis Doche was originally created for the vaudeville play *Les Amazones et les Scythes* (The Amazons and the Scythians) written by Barré, Desfontaines and Radet. Although the vaudeville itself was only moderately successful, the tune *"J'en guette un petit de mon âge"* proved very popular. Newspapers often highlighted it as an emblematic vaudeville tune (*Le Charivari* 1862, November 12, p. 2; *Le Journal amusant* 1874, September 26, p. 2). This success can be attributed partly to the popularity of its composer, Joseph-Denis Doche, within the song and vaudeville milieu. But the tune's intrinsic qualities also played a role. It is a cheerful and lively tune composed in major key and performed *allegro*. Additionally, it follows one of the common metrical patterns employed by songwriters and vaudeville writers, featuring an eight-line stanza with eight syllables per line—a formal characteristic that probably contributed to its frequent reuse.[23] It should be emphasised that the vaudeville tune encompasses not only its musical aspects, but also significant textual features. The tune is closely linked to a specific verse structure and to a particular text and its meaning. In the case of the tune *"J'en guette un petit de mon âge"*, the original lyrics seem to have played a key role in its popularity. The lyrics describe a young Amazon dreaming of love in a conquering way—a scene

[22] For the vaudeville corpus, we did not take into account the repetition of the same tune into one single play, but only counted the reused tunes from play to play.

[23] The strophic scheme for a given tune is called a *"coupe"* in French. For example, the tune *"Où vont tous ces preux chevaliers"* (Where Are All These Brave Knights Going) is suitable for a stanza of 12 lines of 8 syllables each (Capelle 1848, p. 61). According to Capelle, the 8-verse *coupe* is the most common, and, according to the Gidel study, the 8-syllable line is the most common in vaudeville (Capelle 1848, p. 70; Gidel 1986, p. 12).

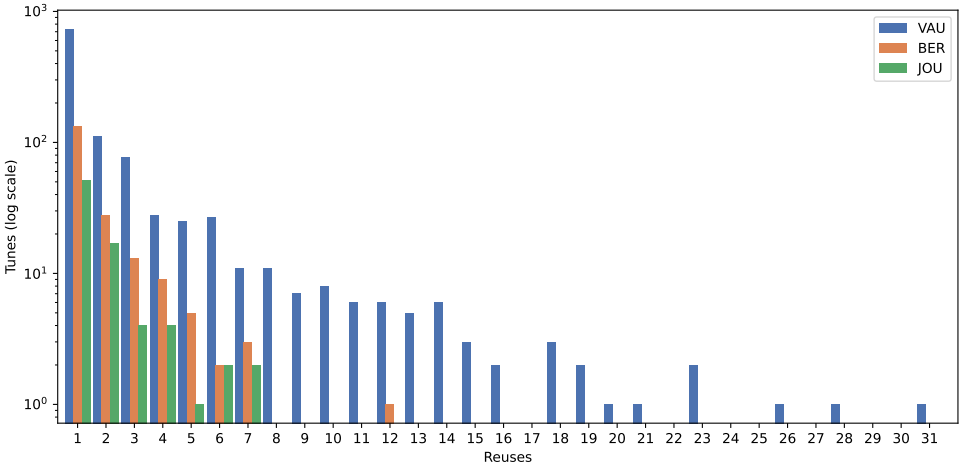

Figure 4: Tune reuse

that embraces an upside-down worldview much to the audience's amusement.[24] Because of this passage, the tune became associated with love scenes and was therefore widely used in these contexts (*Le Monde illustré* 1857, April 18, p. 16).

The Béranger corpus has a remarkable hit that has been reused twelve times: the *"Air du Vaudeville de la Robe et les Bottes"* (Vaudeville Air From The Dress and the Boots), also known as *"Air de la Robe et des bottes"* (Air From The Dress and the Boots), or *"Air du vaudeville de la petite gouvernante"* (Vaudeville Air From The Little Governess).[25] Originally composed as the closing tune for *La Robe et les Bottes* (The Dress and the Boots) in 1810, it was reused in the play *La Petite Gouvernante* (The Little Governess) in 1811. Like the tune *"J'en guette un petit de mon âge"*, its metrical pattern consists of a stanza of eight lines, each comprising eight syllables. Its composer is none other than Joseph-Denis Doche, who can be considered a master of hit production. Throughout the first half of the 19th century, Doche played a leading role as a vaudeville composer. Notably, he was one of the few composers to publish his vaudeville music in a dedicated collection, *La Musette du vaudeville* (1822). Interestingly, the popularity of the vaudeville air from The Dress and the Boots does not seem to derive primarily from its original lyrics, but rather from its musical qualities alone. The press referred to it as late as the 1890s, acknowledging it as a typical vaudeville tune (*Journal des débats politiques et littéraires* 1894, March 24, p. 1).

In the case of Jules Jouy, the number of tune reuses is often lower compared to vaudeville (probably due to the smaller size of the corpus). The maximum number of uses for a single tune reaches seven, indicating a relatively limited

[24] At the time, the motif of reversing roles between men and women was often mocked for its supposed absurdity but also sometimes appreciated or criticised for its erotic potential. Regarding the play *Les Amazones et les Scythes*, see the article dedicated to it in *L'Esprit des journaux français et étrangers*, vol. 2 (1812).

[25] Jean Touchard and Herbert Schneider make the same point (Touchard 1968, p. 135; Schneider 1998, p. 123).

range. Upon examining the specific tunes involved, we find that they are indeed notable "hits" from the *café-concert* scene, such as *"En revenant de la r'vue"* (On the Way Back From the Military Review) and *"Le bureau de placement"*. Moreover, a distinctive aspect of Jouy's work is his tendency to reuse successful tunes that he co-composed with Aristide Bruant. These tunes, in particular, are employed multiple times, with *"Mad'moiselle, écoutez-moi donc!"* (Miss, Listen to Me, Please!) being reused six times and *"L'Enterrement"* (The Funeral) being reused three times. These repetitions generate an autotextual use of the tune, producing familiar comic or quotational effects that can be observed throughout the Jouy corpus.

Conclusion

In conclusion, the TIMBRE database provides a valuable tool for the comparison and statistical exploration of a vast data set, enabling us to uncover patterns and phenomena that would remain hidden if we were content to analyse individual cases. By adopting a global approach, we were able to identify important aspects such as the distribution of song genres and the extent of their popularity, which would be overlooked in a song-by-song or couplet-by-couplet analysis. Therefore, this database makes it possible to study the cultural history of performing arts and leads to a fruitful dialogue between distant reading and close reading, as illustrated in particular by the analysis of parodic uses of Beranger's song in the Jules Jouy's corpus (see Section 5). It is also worth emphasising that tunes are complex entities, as they are dynamic in nature, circulating and undergoing name changes. Many aspects of tunes remain unclear and require further clarification. Consequently, this first systematic approach needs to be expanded by increasing the amount of data and refining the methodology. The inclusion of musical scores to complement and enrich existing information is a potential means of improving the data. In addition, we also plan to further explore, using static means, the formal aspects of tune reuse, such as the utilisation of metrical patterns.

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Translated Verse between Experiment and Tradition (Russian Three-Ictus Dolnik in Translations from Heine)

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Abstract

The article presents the recent findings in rhythmic features of translations made in Russian dolnik (accentual verse with mono- and disyllabic inter-ictic intervals). Although historically this meter was influenced by translations of German dolniks, in Russian tradition it is rooted in ternary meters and avoids binary (iambic/trochaic) cadence. However, in the case of translations, these tendencies of Russian original dolnik could have been altered for the sake of reproducing the source texts' rhythm. The classic examples are Alexander Blok's equirhythmic translations from Heine, which are drastically different from the rhythm of Blok's original dolnik in the proportion of lines with binary rhythm. I investigated the two strategies that prevailed in translations made in dolnik during the 20th century: the equirhythmic method that presumes the usage of dolnik to reproduce the original rhythm, or the non-equirhythmic method that adapted the meter to its rhythmic norms in the target language. Examination of translations from Heine proved that the equirhythmic tradition started by Blok in the early 20th century was quite unstable. In the second half of the century, translators switched to the non-equirhythmic type, abandoning binary lines and showing a strong preference for "pure" dolnik lines with irregular unstressed intervals. While earlier equirhythmic translations clearly demonstrate the possibility of reproducing the rhythm of German dolnik in Russian, this switch to the rhythms of Russian dolnik in the later translations provides strong evidence for the cultural reasons to avoid lines with binary and even ternary rhythm in this meter in Russian poetry. Examples confirmed that even in the free domain of translation, Russian dolnik was a stabilising force and functioned as if it was a new classical meter.

1 Introduction[1]

During the late 19th century and at the turn of the 20th, Russian poetry underwent a profound verse revolution: owing to the efforts of the symbolist poets Zinaida Gippius, Valery Bryusov, Vyacheslav Ivanov, and above all, Alexander

[1] This article is based on a study first presented at the Plotting Poetry 5 conference; an expanded and revised version was later published in Polilova 2024a (see also Polilova 2024b).

Blok, the basic Russian metrical repertoire expanded to include the so-called dolnik, or strict stress-meter (Kolmogorov and Proxorov 1964; Gasparov 1968, 1974; Tarlinskaja 1993). By the 1930s, it turned into the sixth classic Russian meter, adding to the five traditional accentual-syllabic meters: iambs, trochees, amphibrachs, dactyls, and anapests (Gasparov 2000, p. 270).

The backstory of this type of verse in Russian poetry is a series of attempts to recreate or imitate German four- and three-beats meters, mainly in translations and adaptations from Goethe, Schiller, and Heine (Bailey 1969, pp. 1–6; Abisheva 1975). Becoming more and more popular, dolnik passed through rhythmic transformations over the following decades. Prominent scholars analysed this process (Kolmogorov and Proxorov 1964; Gasparov 1968, 1974; etc.), highlighting both general and individual rhythmic peculiarities in the dolnik development and comparing its structure to that of the European accentual and strict-stress verse (Tarlinskaja 1992, 1993; M. Lotman 2015). At the same time, almost beyond the specialists' attention, there is an extensive corpus of Russian translated 20th-century dolnik, used as a rhythmic analogue of European accentual and syllabic meters, most notably for rendering the German strict-stress meter and Knittelvers, and the Spanish octosyllable.

The only exception is Alexander Blok's and Viktor Kolomijcev's translations from Heine explored by James Bailey in his outstanding article "Blok and Heine: An Episode from the History of Russian dol'niki" (1969), which we will discuss below. First, a few definitions and statistics.

2 The Accentual and Syllabic Principle of the Russian Dolnik

Central to the very notion of Russian dolnik are the features of syllabic and accentual regularity. Generally speaking, the dolnik has features of both accentual-syllabic and accentual verse. As Marina Tarlinskaja points out: "The relative syllabic and accentual regularity of structure makes it possible to identify potentially-stressed ('ictic') and potentially-unstressed ('non-ictic') syllabic positions, and to abstract the dolnik verse pattern in the form of a scheme, as with the iamb or the anapaest. However, unlike accentual-syllabic binary and ternary meters, the number of syllables in the non-ictic positions of the dolnik line, both before the first ictus (anacrusis) and between ictuses (inter-ictic intervals), is variable. The anacrusis can be 0, 1, or 2 syllables, and the inter-ictic intervals 1 or 2 syllables. The variable syllabic size of non-ictic positions blurs the structure of lines and moves the dolnik closer to purely accentual (tonic) verse, in which only actual stresses are a reality and the unstressed intervals vary within a wide range" (1993, p. 192).

Lines such as Example 4 and Example 5 illustrate the structure of the Russian three-ictic dolnik. The second column shows the rhythmic pattern, and the third column the order of the unstressed intervals.

This structure of this verse form can be presented using the following scheme or formula:

$$(0/1/2)\times(1/2)\times(1/2)\times(0/1/2/3)$$

Vxozhù ya v tèmnye xràmy,	(x)XxXxxX(x)	1×2
Sovershàyu bèdnyj obryàd.	(xx)XxXxxX	1×2
Tam zhdù ya Prekràsnoj Dàmy	(x)XxxXxX(x)	2×1
V mercàn'i kràsnyx lampàd.	(x)XxXxxX(x)	1×2
V tenì u vysòkoj kolònny	(x)XxxXxxX(x)	2×2
Drozhù ot skrìpa dverèj.	(x)XxXxxX(x)	1-2
A v licò mne glyadìt, ozarènnyj,	(xx)XxxXxxX(x)	2-2
Tol'ko òbraz, lish' sòn o Nèj <...>	(xx)XxxXxX(x)	2-1

Example 4: Alexandr Blok. "Vxozhu ja v temnye xramy…", 25/10/1902

A tepèr' by domòj skorèe	(xx)XxxXxX(x)	2×1
Kameròvoj Galerèej	(xx)XxxxxX(x)	4
V ledyanòj tainstvennyj sàd,	(xx)XxXxxX	1×2
Gde bezmòlvstvuyut vodopàdy,	(xx)XxxxxX(x)	4
Gde vse dèvyat' mne bùdut ràdy,		
	(xx)XxxXxX(x)	2×1
Kak byvàl ty kogdà-to ràd.	(xx)XxxXxX	2×1

Example 5: Anna Akhmatova. "Poema bez geroya", 1940–1962

Here × denotes ictuses ("strong" positions), numbers denote syllables in metrically unstressed ("weak") inter-ictic positions, anacruses and clausulae, and variable intervals are divided by slashes and bracketed. Anacrusis can vary from 0–2 syllables, that is, the beginning of the verse can be dactylic, amphibrachic, or even anapaestic, 1–2 syllables can be put between the strong positions, and the end of the line can be masculine, feminine, or even (hyper-)dactylic.

Using this formula, one could conclude that there are only four variations of the three-ictic dolnik line when anacrusis and clausula alternations are not taken into account: SwwSwwS, SwSwwS, SwwSwS, SwSwS. In fact, the number of rhythmic realisations increases thanks to the patterns that omit the metrical stress. Not all the downbeats are actually stressed; like an accentual-syllabic line, a dolnik line can skip schematic stresses. See the second and fourth lines from Example 5: *Kameròvoj Galerèej* and *Gde bezmòlvstvujut vodopàdy*. They both contain an unstressed interval whose magnitude is greater than two syllables, with only two strong positions accentuated.

Assuming the possibility of skipping the schematic stresses on the first and second ictus (the last ictus is a constant), we get ten possible rhythmic patterns, as described by Gasparov (1968, pp. 67–70, 1974, pp. 223–225; Liapin and Pilshchikov 2015, p. 61), who suggested reducing them to five most common basic forms:

I. (0/1/2) × 2 × 2 × (0/1/2/3)	(x)XxxXxxX(x)
II. (0/1/2) × 1 × 2 × (0/1/2/3)	(x)XxXxxX(x)

Form number	Rhythmic scheme	Unstressed Intervals	1890-1910	1910-1920	1920-1930	1930-1940	1940-1950	1950-1960	Total
I	(x)XxxXxxX(x)	2×2	33.9%	22.7%	26.9%	19.0%	16.5%	11.1%	18.9%
II	(x)XxXxxX(x)	1×2	31.9%	22.7%	16.9%	13.7%	12.9%	13.7%	14.5%
III	(x)XxxXxX(x)	2×1	27.5%	42.7%	46.1%	45.2%	51.4%	52.5%	47.8%
IV	(x)XxXxX(x)	1×1	3.7%	2.4%	1.7%	0.5%	0.3%	0.4%	1%
V	(x)XxxxxX(0)	4	1.2%	6.1%	11.4%	20.7%	18.0%	21.6%	16.3%
Others			1.8%	3.4%	3.0%	0.9%	0.9%	0.7%	1.5%

Table 1: The preferred forms of the Russian three-ictus dolnik (Gasparov 1974, p. 225, table 3)

III. (0/1/2) × 2 × 1 × (0/1/2/3)	(x)XxxXxX(x)
IV. (0/1/2) × 1 × 1 × (0/1/2/3)	(x)XxXxX(x)
V. (0/1/2) × 4 × (0/1/2/3)	(x)XxxxxX(x)

Form V is very peculiar, with a virtual (or movable) unstressed ictus or a prolonged inter-ictic interval as an “equivalent of stress”. Forms II and III would turn into form V if their second ictus were not stressed. As Liapin and Pilshchkov pointed out, “in Form V, the syllabic factor prevails over the tonic factor” (Liapin and Pilshchikov 2015, p. 61).

The forms with a skipped stress are divided into two groups: those in which the place of the ictus is not in doubt and those in which it is uncertain (as in form V). Here are possible correspondences:

XxxxxxX	2×2
XxxxxX	1×2 / 2×1
XxxxX	1×1
xxxXxxX	2×2 / 1×2
xxxXxX	2×1 / 1×1
xxxxxX	1×2 / 2×1 / 1×1

Variations with an omitted stress, other than form V ((0/1/2) × 4 × (0/1/2/3)), are scarce. In poems with a constant anacrusis, doubts concerning the first ictus can be resolved; in other cases, it is impossible. This is important when estimating the proportion of binary, ternary, and dolnik lines (i.e., lines with irregular—1×2 / 2×1—unstressed intervals or four-syllable unstressed intervals) in the text. For these latter patterns xxxXxxX, xxxXxX, xxxxxX, there is no way to determine their binary, ternary, or ‘pure’ dolnik rhythm, so they should be considered separately in the rhythmic analysis.

For further discussion I must underline that the most crucial rhythmic feature of the Russian dolnik is a negligible number of binary lines. It is only natural that Example 4 and Example 5 do not have iambic or trochaic rhythmic variations. Table 1 reveals the percentage of rhythmic forms from the 1890s to 1960s.

The main trends are the following:

1. a gradual decrease in the proportion of ternary lines

2. almost complete disappearance of the unpopular binary lines

3. preference of dolnik form III (2×1) over form II (1×2)

Poets favour form III (2-1), whose popularity is counterbalanced by form V.

Let us return to the article mentioned above by J. Bailey, who unveiled the fact that Blok's original dolnik and his dolnik translations from Heine (1909) showed drastic differences in the proportion of lines with binary rhythm. Viktor Kolomijcev's translations (1919–1921) show similar rhythmic tendencies (Bailey 1969, p. 12). In other words, Bailey demonstrated that an equirhythmic rendering of Heine's verse is possible in Russian, and at least two translators succeeded in copying the prosody of the German source poems.

Bailey concludes his work with the words: "How much Blok's stringent demands for rhythmical exactness have affected later translations of Heine and how common *dol'niki* on a binary basis have become in Russian poetry are open questions" (Bailey 1969, p. 16)[2]. In the past half-century, no one has tried to answer this and so it became the starting point of this study.

This article is only a first, brief overview of the rhythmic evolution that the three-ictus dolnik, used in Russian poetic translations of the 20th century, has undergone. The material consists of poetic translations from Heine composed from 1909 to the 1990s and included in the edition (Gejne 2003).

3 Equirhythmic and Non-Equirhythmic Russian Translations from Heine

When discussing the correspondences between the verse structure of the original and translated texts, I use the concepts of equimetricity, equirhythmicity, and equiprosodicity (the term "equiprosodic translation" was suggested by M.-K. Lotman 2012), which are accepted in the research literature. Each indicates which level of the source text structure the translator conveys: the prosodic, the metrical, the rhythmic, or all of them simultaneously. Within a single language, the prosodic system, meter, and rhythm of the text generally correlate hierarchically, but in the process of rendering the original to another language, they can conflict. This means that translation can be equimetrical but non-equirhythmic, equirhythmic but non-equimetrical, and equimetrical but non-equiprosodic. All the translations from Heine discussed below are equiprosodic and equimetrical but differ regarding rhythm rendering.

I explored the rhythmic structure of verse translations from Heine by seven Russian translators: Alexander Blok (1880–1921), Wilhelm Sorgenfrei (1882–1938), Samuil Marshak (1887–1964), Wilhelm Levik (1906–1982), Greinem Ratgauz (1934–2011), Vladimir Levansky (1942–2010), Vladimir Letuchy (1943–2015). The corpus composed of all the translations in homogeneous three-ictus

[2] Kolomijcev's translations, while generally preserving the features of Blok's translations, show some individual differences. The same bipartite structure emerges, although it is somewhat weaker, the amount of ternary forming variations has risen at the expense of the binary and *dol'niki* forming variations… (Bailey 1969, p. 13).

dolnik[3] presented in the edition (Gejne 2003).[4] It contains 520 lines, 30 translations (the Appendix gives a list of texts examined with the number of lines in each and the original German title). Although the number of lines is small, it is enough to demonstrate how the rhythmic strategies of the translators differ. In order to categorise rhythmic patterns, I have followed the conventions set forth in the previous section of this article.

Table 2 and Table 3 show the share of rhythmic patterns in different translators and summarise the results obtained. These data confirm what has already been stated about Blok's translations and his own dolniks with their almost total lack of binary variations. According to Gasparov's calculations, the number of binary lines in Blok's dolniks does not exceed 1.3% (Gasparov 1974, p. 238, table 14), but his translations from Heine have a third of such lines. In his translations, Blok preserves the rhythmic features of Heine's verse with extraordinary precision (see Figure 1): they provide a striking example of interlingual rhythmic copying, where not only the variety of rhythmic types but also their relative proportions in the translation faithfully render the original text. Blok achieves this rhythmic precision by keeping a close eye on Heine's rhythmic variations following the rhythmic changes of the original line by line:

Die Jahre kommen und gehen,	xXxXxxXx	xxXxXxxXx	Plemenà ùxodyat v mogìlu,
Geschlechter steigen ins Grab,	xXxXxxX	xXxXxxX	Idùt, proxòdyat godà,
Doch nimmer vergeht die Liebe,	xXxxXxXx	xXxxXxXx	I tòl'ko lyubòv' ne vỳrvat'
Die ich im Herzen hab.	xXxXxX	xXxxxX	Iz sèrdca nikogdà.
Nur einmal noch möcht ich dich sehen,	xXxxXxxXx	xxXxxXxxXx	Tol'ko ràz by tebyà mne uvìdet'
Und sinken vor dir aufs Knie,	xXxXxxX	xXxxXxX	Sklonìt'sya k tvoìm nogàm,
Und sterbend zu dir sprechen:	xXxXxX	xXxXxxXx	Skazàt' tebè, umiràya:
"Madame, ich liebe Sie!"	xXxXxX	xXxXxX	Ya vàs lyublyù, madàm!

No other translator of Heine demonstrates such formal rhythmic accuracy.

Other translators of the first half of the century, such as Sorgenfrei, Marshak and Levik (as well as Heine's translators not represented in our corpus: Mikhail Kuzmin, Lev Penkovsky, Tamara Silman) also try to copy the original sound of the German verse, preserving a high number of binary lines. However, they generally fail (or do not attempt) to render the original balance of line types and intervals. Thus, Sorgenfrei and Levik use too many ternary lines, and Marshak uses too few dolnik lines. Nevertheless, their translations, like Blok's examples, are worth classifying as equirhythmic.

In the second half of the century, translations by Ratgauz, Levansky, and Letuchy, despite their individual rhythmic peculiarities, present a very different strategy. In Levansky and Letuchy, the proportion of binary lines is also noticeably higher than in the common Russian dolnik. However, the dominant

[3] Texts with alternating four-ictic lines and three-ictic lines were excluded from consideration.

[4] As a minimum number of lines per translator, I determined a limit of 48. Gejne 2003 includes only 8 dolnik lines from Wilhelm Sorgenfrei's translations and only 32 lines from Ratgauz's translation, which is why I supplemented the corpus with translations from other editions. These texts are marked with an asterisk in the list of texts examined (see the Appendix below).

	Rhythmic scheme	Blok 1911	Sorgenfrei 1938	Levik 1941–1956	Marshak 1951–1957	Ratgauz 1989–2003	Levansky 2003	Letuchy 2003	Total
Binary lines	(x)XxXxX(x)	30	6	20	11	—	6	11	84
	(x)XxxxX(x)	12	1	6	4	1	1	1	26
Ternary lines	(x)XxxXxxX(x)	27	17	29	23	27	15	18	156
	(x)XxxxxxX(x)	—	—	—	—	—	—	1	1
Dolniks	(x)XxXxxX(x)	32	16	13	3	8	31	15	118
	(x)XxxXxX(x)	26	6	7	5	11	20	26	101
	(x)XxxxxX(x)	5	1	3	1	1	6	2	19
Rhythmically ambiguous lines	(x)xxxXxX(x)	—	1	2	1	—	1	2	7
	(x)xxxXxxX(x)	—	—	4	—	—	—	3	7
	(x)xxxxxX(x)	—	—	—	—	—	—	1	1
Total		132	48	84	48	48	80	80	520

Table 2: The share of rhythmic patterns

	Binary	Ternary	Dolniks
Heine (Tarlinskaja 1993, p. 80, table 5)	35%	20%	45%
Blok 1911	31.8%	20.5%	47.7%
Sorgenfrei 1938	14.9%	36.2%	48.9%
Levik 1941–1956	33.3%	37.2%	27%
Marshak 1951–1957	31.9%	48.9%	19.1%
Ratgauz 1989–2003	2.1%	56.3%	41.7%
Levansky 2003	8.9%	19%	72.2%
Letuchy 2003	16.2%	25.7%	58.1%
Russian dolnik 1890–1960 (Gasparov 1974, p. 225, table 3)	1%	19%	79%

Table 3: The share of rhythmic patterns (percentage of total)

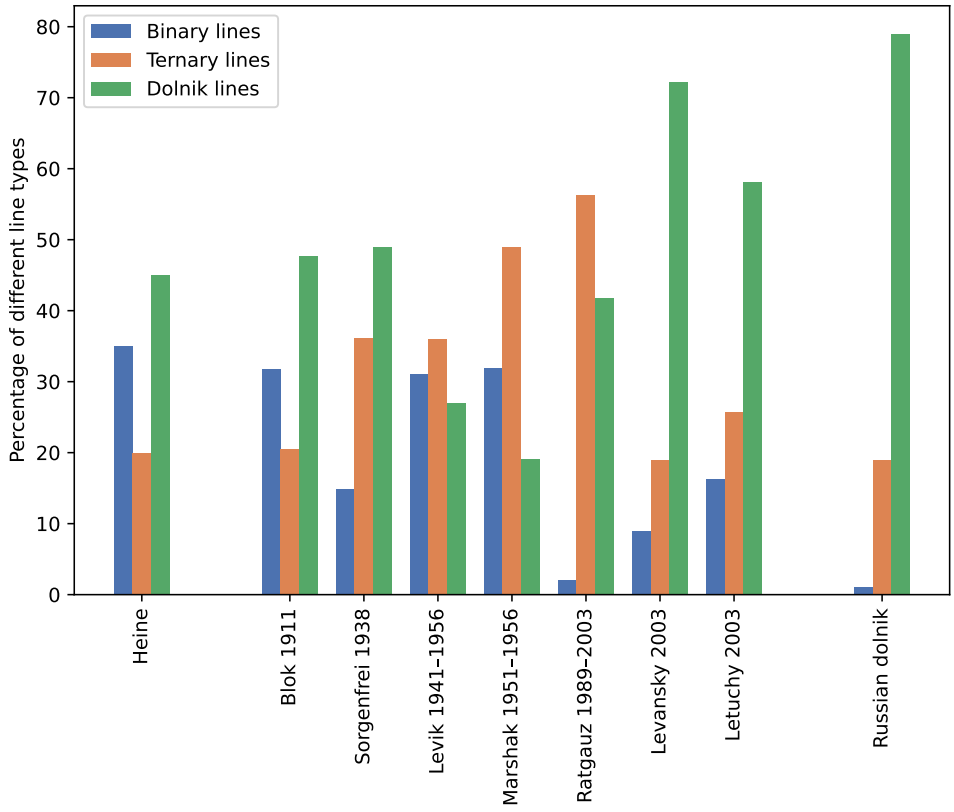

Figure 1: Preferences in the usage of line types

rhythmic type, in accordance with the practice of Russian poetry of this period (see Table 1), are the dolnik lines. Ratgauz's translations seem rhythmically oriented to the sound of the early Russian dolnik and Yuri Tynianov's translation of Heine's "Deutschland. Ein Wintermährchen" (1934). I do not discuss here the structure of this translation because it was excluded from consideration along with other texts with alternating four-ictic lines and three-ictic lines. Let me note, nonetheless, that Tynianov made extensive use of ternary rhythmic variations (Example 6).

My znàem i mùzyku, znàem i tèkst,	(x)XxxXxxXxxX	2×2×2
I àvtorov znavàli;	(x)XxxxX(x)	3 (1×1)
Publìchno slàvili vòdu onì,	(x)XxXxxXxxX	1×2×2
A dòma vinò popivàli.	(x)XxxXxxX(x)	2×2

Example 6: Yuri Tynianov's translation of Heine's "Germaniya", 1934

Tynianov adapted Heine's original meter to the rhythmic norms of the target language. Levansky and Letuchy do the same, showing strong preference for 'pure' dolnik lines with irregular unstressed intervals.

4 Conclusion

The examination of translations from Heine proved that the equirhythmic tradition started by Blok in the early 20th century was quite unstable and in the second half of the century translators switched to the non-equirhythmic type of verse translation, abandoning binary lines and showing strong preference for 'pure' dolnik lines with irregular unstressed intervals. While earlier equirhythmic translations clearly demonstrate the possibility to reproduce the rhythm of German dolnik in Russian, this switch to Russian dolnik's rhythm in the later translations provides strong evidence for the cultural reasons to avoid lines with binary and even ternary rhythm in this meter in Russian poetry.

Figure 2 shows two interconnected trends: the frequency of binary lines decreases and the frequency of dolnik lines increases in translations over time. 'Pure' dolnik verse has undergone final culture canonisation.

Nineteenth century Russian poets and readers rejected the "jerky rhythms" of the strict-stress meter, only making peace with "syllabic chaos" (Bailey 1969, p. 15) after the pioneering example of Blok's poems. By the end of the 20th century, this process was complete. Our data confirmed that even in the free domain of translation, the Russian dolnik was a stabilising force and functioned as if it was a new classical meter.

This conclusion could be expanded with an example of the same trend in dolnik translations of Spanish octosyllabic verse into Russian. Though the initial idea of representing syllabic rhythm using rhythmically-free dolnik was pursued in early 20th-century translations, later translations imbibed the rhythm of

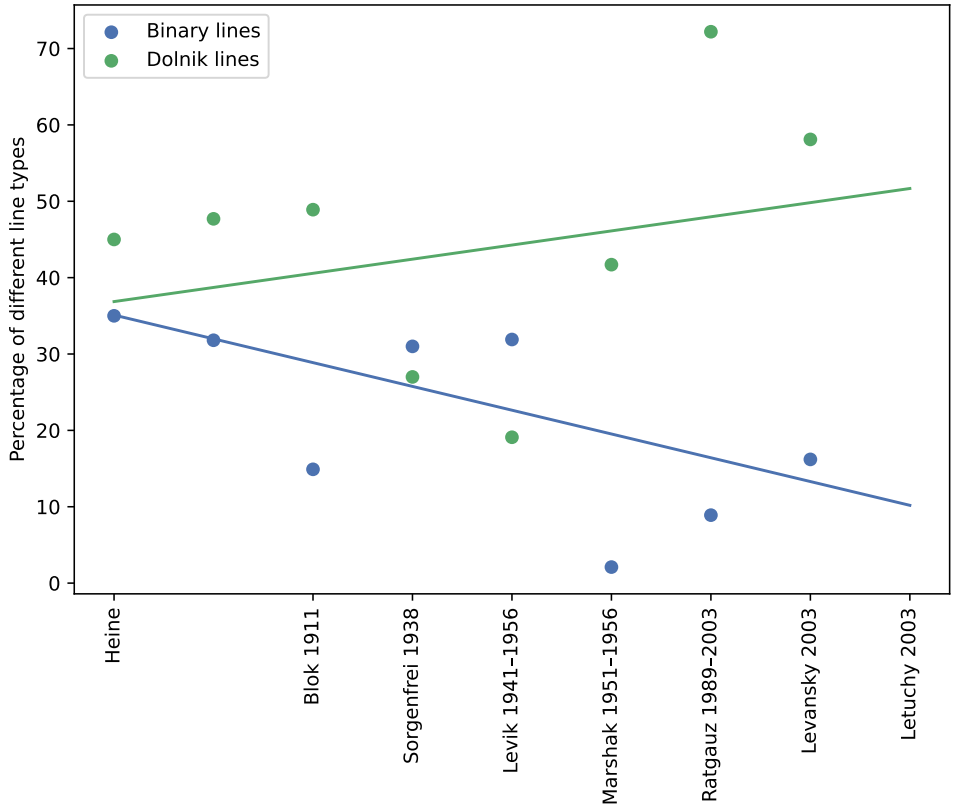

Figure 2: Changes in the usage of line types in translations

original Russian dolnik (with limited variability in rhythmic pattern). However, this is material for further discussion.

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Appendix

Alexander Blok ((published 1911, 132 lines)

1. “Не знаю, что́ значит такое...” (“Ich weiß nicht, was soll es bedeuten...”) 24 lines
2. “Сырая ночь и буря...” (“Die Nacht ist feucht und stürmisch...”) 20 lines
3. “Красавица рыбачка...” (“Du schönes Fischermädchen...”) 12 lines
4. “Играет буря танец...” (“Der Sturm spielt auf zum Tanze...”) 12 lines
5. “Вечер пришел безмолвный...” (“Der Abend kommt gezogen...”) 32 lines

6. “На дальнем горизонте…” (“Am fernen Horizonte...”) 12 lines
7. “Ты знаешь, что живу я...” (“Wie kannst du ruhig schlafen...”) 12 lines
8. “Племена уходят в могилу…” (“Die Jahre kommen und gehen...”) 8 lines

Wilhelm Sorgenfrei (published 1938, 48 lines)

1. “Самоубийц хоронят...” (“Am Kreuzweg wird begraben...”) 8 lines
2. “Во сне я горько плакал…” * (“Ich hab’ im Traum’ geweinet…”) 12 lines
3. “Вот вызвал я силою слова…” * (“Da hab’ ich viel blasse Leichen…”) 28 lines

Wilhelm Levik (published 1941–1956, 84 lines)

1. “Пугливой лилии страшен...” (“Die Lotosblume ängstigt...”) 12 lines
2. “Как призрак забытый, из гроба...” (“Manch Bild vergessener Zeiten...”) 24 lines
3. “Сырая ночь беззвездна…” (“Der Herbstwind rüttelt die Bäume...”) 20 lines
4. “Мы возле рыбацкой лачуги…” (“Wir saßen am Fischerhause...”) 28 lines

Samuil Marshak (1940s-1950s, 48 lines)

1. “Весь отражен простором...” (“Im Rhein im schönen Strome...”) 12 lines
2. “Рокочут трубы оркестра…” (“Das ist ein Flöten und Geigen...”) 8 lines
3. “Двое перед разлукой…” (“Wenn zwei voneinander scheiden...”) 8 lines
4. “Трубят голубые гусары…” (“Es blasen die blauen Husaren...”) 8 lines
5. “Кричат, негодуя, кастраты...” (“Doch die Kastraten klagten...”) 12 lines

Greinem Ratgauz (published 1989–2003, 48 lines)

1. “Застыли недвижно звезды...” (“Es stehen unbeweglich...”) 12 lines
2. “На крыльях могучей песни…” (“Auf Flügeln des Gesanges...”) 20 lines
3. “Я вижу: звезда упала…” * (“Es fällt ein Stern herunter…”) 16 lines

Vladimir Levansky (published 2003, 80 lines)

1. “Под луною море без краю...” (“Der Mond ist aufgegangen...”) 12 lines
2. “Я побывал в том зале…” (“Ich trat in jene Hallen...”) 4 lines
3. “В каморке девушка дремлет...” (“Die Jungfrau schläft in der Kammer...”) 20 lines
4. “Застыл у ее портрета…” (“Ich stand in dunkeln Träumen...”) 12 lines

5. “Зачем слезой одинокой…” (“Was will die einsame Träne?..”) 16 lines
6. “Толкуют, что страсть моя – пытка...” (“Man glaubt, daß ich mich gräme...”) 16 lines

Vladimir Letuchy (published 2003, 80 lines)

1. “На богомолье в Кевлар” (“Die Wallfahrt nach Kevlaar”) 80 lines

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Blowing *The Boy's Magic Horn*: Plotted and Synthesised Romanticism

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Abstract

At the heart of the »textklang« (Sound of Text) project is the development of a mixed-method approach to investigate the interrelation between written lyric poetry and its sonic realisation. It is an interdisciplinary collaboration between the German Literary Archive in Marbach and the University of Stuttgart that includes literary studies, digital humanities, computational linguistics, laboratory phonology and speech technology. The project's corpus is centred on the poetry of Romanticism and is based on the holdings of the German Literature Archive. In our contribution, we illustrate a multi-perspective approach to one collection within the corpus entitled *The Boy's Magic Horn* (*Des Knaben Wunderhorn*), edited in three volumes by A. v. Arnim and C. Brentano in 1806 and 1808 and including more than 700 poems. *The Boy's Magic Horn* is considered one of the most influential poetry collections in German literature because of its vivid reception in both 'low' folkloristic cultures and 'high' culture, especially in musical settings (G. Mahler, J. Brahms, F. Silcher). We share some initial outcomes of the ongoing research process considering quantitative, textual, prosodic, and sonic aspects. As part of the project's methodological and experimental toolbox, we present a speech synthesis model that has been trained on this sub-corpus and which results in a better realisation of poetic speech compared to synthesis models exclusively trained on prose data. Finally, we discuss the challenges this data pose to automatic processing tools.

1 Introduction

This paper presents work within the »textklang« (Sound of Text) project, which is based at the German Literary Archive in Marbach and at the Institute for Natural Language Processing and the Institute of Literary Studies at the University of Stuttgart. The project includes literary studies, digital humanities, computational linguistics, laboratory phonology and speech technology. It was funded by the German Federal Ministry of Education and Research and ran from 2021 to 2023.

The »textklang« project follows a mixed-method approach to investigating the interrelation between written lyric poetry and its sonic expression. Its objectives include analysing the prosody of written poetry as it is realised in recitation and musical performance, developing text-to-speech synthesis for studying prosody perception, and collecting metadata to analyse and visualise intertextuality and intermediality.

The research corpus we worked with focuses on lyric poetry from the period of German Romanticism. This poetry is particularly suitable for studying oral, aural, sonic, and prosodic aspects, as it was influenced by the concept of 'Volkslied' (popular or folk poetry) developed by Johann Gottfried Herder and the Grimm brothers (J. Grimm and W. Grimm 1815; Herder 1773). The poetry often depicts human and animal voices (especially birds), oral transmission, witness, authorship, and various styles of performing spoken words (Eschenbach and Richter 2020; Richter et al. 2023).

The research corpus was predominantly fed from holdings of the German Literature Archive, which contains round 4,250 printed texts and 2,700 recordings of recitations and musical performances. Furthermore, this corpus was increased by our own production. We recorded 700 poems from *The Boy's Magic Horn* and 180 *Children's and Household Tales* by the Grimm brothers (J. Grimm and W. Grimm 1812, 1815).

In this paper we will focus on *The Boy's Magic Horn*, a collection of German poems, and its relevance within the project. After we have 'plotted' the main characteristics of this sub-corpus, we will present our speech synthesis model trained on these data and discuss the challenges this corpus poses to automatic processing tools.

2 *The Boy's Magic Horn*

The Boy's Magic Horn. Old German songs (*Des Knaben Wunderhorn. Alte deutsche Lieder*) is a collection of poetry, written in German and edited in three volumes by Achim von Arnim and Clemens Brentano in 1806 and 1808 (Arnim and Brentano 1806, 1808a,b). It includes about 700 lyric poems that are versified and rhymed, as well as a few texts in prose (comments and an essay on poetology). Predominant genres are songs, ballads, children's songs, prayers, and short plays. Subjects and themes in *The Boy's Magic Horn* are everyday life, Christianity and Catholicism and faith, history, myths, nature, social and political experiences (especially in rural environments). *The Boy's Magic Horn* also includes period-specific misogynistic and anti-Jewish stereotypes. One of the collection's main characteristics is that it is deeply rooted in late-medieval and Early Modern literary tradition. *The Boy's Magic Horn* is considered to be one of the most influential collections of lyric poetry in German literature because of its vivid reception both in 'low' and 'high' folkloristic cultures, especially in musical settings, for instance by Gustav Mahler, Johannes Brahms, Friedrich Silcher, Robert Schumann, Karlheinz Stockhausen, and Bob Dylan (Benischek 2008).

2.1 Text and Audio Data

Data from *The Boy's Magic Horn* in the »textklang« project comprise text files and audio files that we produced, aligned, annotated and synthesised. Files for each text, in .txt format, were extracted from DTA (Deutsches Textarchiv 2023), which is a collection of digitised and scholarly edited first printings of canonical German literature. Each text file was collocated manually with the printed scholarly edition by Heinz Rölleke (Brentano 1975–1978) in order to provide highly reliable texts. These texts served as a basis both for reading during the recording sessions and for later analysis. After the audio files were edited and reviewed, some text files had to be slightly altered to match the recordings exactly, for example in German-specific variable inflectional endings or with omitted words and to establish an accurate alignment of text and audio files.

The audio files were recorded and supervised by Wolfgang Wokurek at the Phonetic Lab at the University of Stuttgart. Toni Bernhart was the speaker. In addition to the poems themselves, the recordings included paratexts such as title pages, content tables, indices, and sources on which the poems are based and which are often cited as part of the titles by the authors. Poems written in Low German and in Alemannic dialects were, however, not included mainly to be able to record everything with the same speaker. The signal

chain was composed of one Neumann U 87 Ai microphone (in omni-directional setting), audio interface Yamaha 1608-D, and mixing console Yamaha CL1, which were connected through a Dante Controller 4.1.0.5 network. Software used in recording and post production processes was Steinberg Nuendo Live 1.1.0 and Audacity 3.1.3 without a limiter, compressor, or filter plug-ins. *The Boy's Magic Horn* audio files recorded in 48 kHz 24 bit mono .wav format encompass 19 GB, which corresponds to approximately 36 hours of time.

2.2 Data and Metadata Visualisation

In order to provide data for further analysis on the interrelation of prosody and structural patterns, we set up a collection of metadata. They include the titles of each poem, the number of tokens per text, the genre of the texts, the authors and titles of the sources and pre-texts with an obvious intertextual relation to the poems as well as authors and titles of later texts which obviously allude to the poems, and the years of publication both of sources and later adaptations. We used Keshif to visualise data and metadata. Keshif is a web-based visualisation and analytics tool that allows users to explore datasets quickly (Yalçın et al. 2016). To prepare data for Keshif, data were collected, converted into a JSON file, and imported into the tool.

3 Text-to-Speech Overview

The primary focus of »textklang« is to investigate the interplay of a poem's text, its sonic realisation in recitation, and listeners' perception in an experimental setting. To conduct these experiments, we generated auditory test materials by re-synthesising and manipulating recordings of recitations using text-to-speech synthesis (TTS) (cf. Schauffler et al. 2022). Hence, high-quality speech synthesis for poetic data was crucial for our applications. In this paper, we will describe a short experiment on 'plotting' the sound of *The Boy's Magic Horn* using speech synthesis. We trained a TTS model on our recordings of this sub-corpus and examined how the model realised poetic speech and handled genre and speaker specific characteristics compared to a TTS model trained exclusively on prose.

We followed the established approach on text-to-speech synthesis to break down the challenge of generating a waveform from text into several subtasks (Lux and Vu 2022; Ren, Hu, et al. 2020; Skerry-Ryan et al. 2018). A first step was to transform the input text from a character sequence into a phoneme sequence with a grapheme-to-phoneme (G2P) conversion model, also referred to as phonemiser. While it is possible to omit this pre-processing step and train a TTS model directly on grapheme input (see e.g. Shen et al. 2018) employing a phonetic transcription is usually advantageous since a phonetic transcription represents the audio much more closely than graphemes, helping to reduce mispronunciation errors.

In the following step, the TTS model, for example Tacotron 2 (Shen et al. 2018), Fastspeech 2 (Ren, Hu, et al. 2020), or the more recent PortaSpeech (Ren, Liu, et al. 2021), generates a mel-spectrogram from the phoneme sequence.

This is a challenging task since there are infinitely many possible speech variations that can correspond to the same text: Depending on speaker identity, conveyed emotion, focus highlighting through pitch accents, or just some minor variations in prosody, the speech signal will be different. While some variations can be more or less acceptable than others, the number of adequate realisations remains infinite. This is also known as the one-to-many mapping problem in TTS (Ren, Hu, et al. 2020). Thus, learning to generate an acceptable speech representation for text with deep neural networks usually requires huge amounts of high-quality audio data and aligned text. Finally, a vocoder such as WaveNet (Oord et al. 2016) or HiFi-GAN (Kong et al. 2020) transformed the mel-spectrogram to a waveform.

4 Experimental Setup and Results

We attempted to synthesise poetic speech before in Koch et al. 2022, where we used a pretrained multilingual TTS model which we first finetuned on German prose data and then further trained on 20 poems read by a single professional speaker in a second finetuning step. The model trained on poetry was perceived as sounding by far 'more poetic' compared to the model exclusively trained on prose in a human evaluation study. In view of these promising results, we took on our PoeticTTS approach by using a robust pretrained multilingual model which we then finetuned on German prose data as our baseline. For our final model, we additionally finetuned on our recordings of *The Boy's Magic Horn*, for simplicity we call this the *poetry model*. In this experiment, we wanted to take a closer look at how certain genre specific properties can be learned from training data. In particular, we measured articulation rate and duration of pauses and further compare F_0 contours produced by the human speaker as well as the baseline and the poetry model on a small test set comprising seven poems from the collection.

4.1 Implementation Details

Our speech synthesis model was built in python with the open-source Toolkit IMS Toucan as described in Lux, Koch, et al. 2022. It was a modified implementation of FastSpeech 2 (Ren, Hu, et al. 2020) with Conformer blocks (Gulati et al. 2020) both in encoder and decoder instead of Transformer (Vaswani et al. 2017), and Fast-Pitch style (Łańcucki 2021) phone-wise averaging of F_0 and energy values instead of the original frame-wise prediction of these values. G2P conversion in IMS Toucan was performed by the *phonemizer* (Bernard and Titeux 2021) python-package using espeak-ng[1] as the backend. Further, IMS Toucan provided an integrated aligner (Lux, Koch, et al. 2023) for temporal alignment of phonemes with the corresponding audio during training. As vocoder we took the toolkit's implementation of HiFi-GAN (Kong et al. 2020). For the vocoder as well as the aligner and FastSpeech 2 models we used the

[1] https://github.com/espeak-ng/espeak-ng.

provided pretrained multilingual models of IMS Toucan release v2.2 which are trained on approximately 400 hours of data in 14 languages.

4.2 Data Pre-Processing

To train our baseline model we finetuned the aligner and FastSpeech 2 models on a part of the German subset of the pretraining data for 10,000 steps. In particular, we used the Thorsten-Corpus (Müller and Kreutz 2021) as well as the HUI-Audio-Corpus- German (Puchtler et al. 2021), which contain almost exclusively prosaic data.

To train the poetry model, we used recordings of 211 poems from *The Boy's Magic Horn*. These recordings and their corresponding text transcripts were already edited and checked as described in Section 2. However, training the TTS model required short audio snippets of around five to 20 seconds. Thus, we could not use the recordings as they are but had to cut them into shorter segments. We therefore cut the texts of the poems into chunks of two verses and automatically segmented the audio file according to the durations of each chunk using the aligner model. Specifically, we calculated the durations of each phoneme in the audio by means of the aligner model, and then summed the durations of the phonemes for each two-verse chunk in the transcript to obtain the total duration of each chunk. The audio file was then split into segments such that each segment corresponded to one chunk.

However, we found that our automatic pre-processing pipeline encountered some major issues: First, our weak line-based heuristic of splitting texts into pieces of two verses did not apply well in some cases due to inconsistencies in shape and formatting of the texts in accordance with the historical first print. Our approach was especially unsuitable in instances where poems in verse form were mixed with accompanying prose text. Second, the phonemiser used in this work is designed to work on modern day German and thus struggled with archaic and inconsistent spelling in *The Boy's Magic Horn*. For example, the German preposition *bei* is often spelled *bey* in our data, which our phonemiser transcribes as [bəˈypsɪlɔn] instead of the correct [baɪ]. Moreover, the texts contained many instances of archaisms, words and wordforms in Ancient Greek and Latin, in Middle High German and regional German dialects, proper nouns, neologisms and onomatopoeia which pose a great challenge to our phonemiser. In addition, the speech data of our recordings was quite different from standard data since the speaker might for example decide to follow the meter of the poem, leading to uncommon emphasis. Further, there is much more prosodic variation in speaking rate and pitch progression, which was challenging for our aligner model trained on prose data. Together with the errors in text segmentation and phonemisation, which propagate to automatic audio segmentation, this led to a considerable number of corrupted samples. To counteract these issues, we excluded samples that interfere with the training of our TTS and aligner models leaving a remainder of 2,348 text–audio pairs.

We selected seven poems to test our models and excluded all samples corresponding to these poems from the training set. We used the remaining data to perform further finetuning of our baseline model for 5,000 steps, yielding

poem	1	2	3	4	5	6	7
human	9.39	10.24	9.14	9.42	10.07	11.90	11.87
baseline	11.75	12.34	11.82	11.88	12.57	12.67	12.92
poetry model	9.65	11.57	9.89	10.00	10.86	10.40	11.25

Table 1: Articulation rate calculated as the average number of phones per second, excluding pauses.

poem	1	2	3	4	5	6	7
human	0.30	0.19	0.19	0.26	0.23	0.23	0.14
baseline	0.11	0.10	0.08	0.10	0.11	0.11	0.10
poetry model	0.19	0.21	0.19	0.22	0.26	0.27	0.13

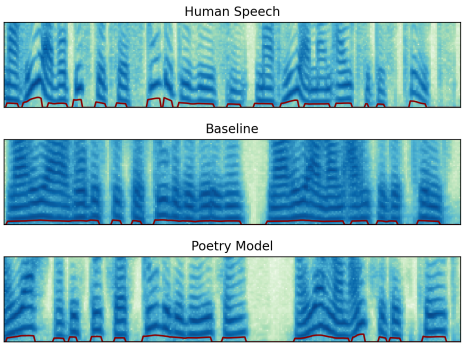
Table 2: Average duration of pauses in seconds, excluding silence at the beginning and end of audio.

our poetry model. We deliberately chose some poems for testing that contained interesting stylistic phenomena, which we will discuss in Section 5. In detail, our test set consisted of the poems [1] *Das Wunderhorn* (*The Magic Horn*), [2] *Großmutter Schlangenköchin* (*Snake Cooker Granny*), [3] *Lied des Verfolgten im Thurm* (*The Song of the Persecuted in the Tower*), [4] *Schön Dännerl* (*Cute Dännerl*), [5] *Aus dem Odenwald* (*From Odenwald*), [6] *Knecht, Magd, Ochs, Esel und alles, was mein ist* (*Servant, Maid, Ox, Donkey, and All Mine*) and [7] *Kinder-Konzert* (*Children's Concert*).

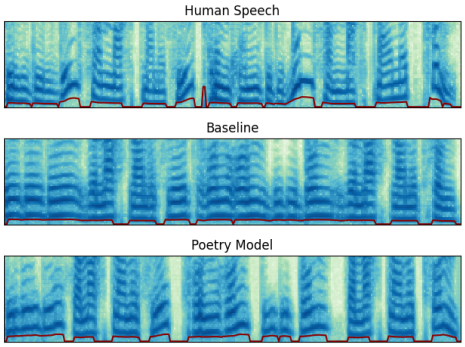
4.3 Experiments and Results

To investigate the difference in realisation of poetry between our baseline model and the poetry model, we compared prosodic features of the synthesised speech produced by both models with the human reference audio. We measured articulation rate and duration of pauses aggregated for each poem and took a closer look at pitch progression.

Table 1 presents the mean articulation rate for each poem. We calculated articulation rate by dividing the total number of phones in a poem by the sum of durations of all phones, excluding durations that correspond to pauses or silence at the beginning and end of each audio file. First, we noticed the rather slow speaking rate of the human speaker. For comparison, Trouvain et al. 2001 report a mean articulation rate of 13.06 phones per seconds in German read speech with a standard deviation of 2.03 calculated on the KielCorpus (Kohler et al. 1995) consisting of prose data. The results show that, although at the lower limit, the articulation rate of speech produced by the baseline model (which was exclusively trained on prose data) is still within the expected range for prose texts. In comparison, speech produced by our poetry model exhibits a slower articulation rate closer to the human reference, indicating that the poetry model adapted to the articulation rate of the human speaker to a large extent during the second finetuning stage.



(a) Comparison of spectrograms of the text *Maria, wo bist du zur Stube gewesen? Maria, mein einziges Kind!* (*Maria, where were you brought up? Maria, my only child!*)
(Our translation)



(b) Comparison of spectrograms of the text *Dill dill dill, so macht meine Flöt, Rum rum, bidi bum, so macht meine Trumm.* (*Dill dill dill, so goes my flute, rum rum, bidi bum, so goes my drum.*)
(Our translation)

Figure 1: Two exemplary comparisons of spectrograms produced by the baseline and poetry model, along with the human reference. The F_0 contour is shown in red.

Since pauses are an important means to control speech tempo (Trouvain et al. 2001), we further examined the average duration of pauses in seconds, shown in Table 2. Since synthetic audio was produced for each two-verse chunk separately, information about pauses between such chunks was lost. We therefore excluded all silences at the beginning and end of each audio both in synthetic and human audio samples in our calculations. We found that the values calculated in the poetry model are in close proximity to that of the human speaker, deviating in one or the other direction by only a few milliseconds. In contrast, the baseline model consistently produces shorter pauses than the reference with a difference of more than 11ms on average. These results indicate that apart from a slower articulation rate, the poetry model also adapted to the rather long pauses in our recordings.

Finally, we present an exemplary comparison of spectrograms generated by both TTS models and human reference in Figure 1. Figure 1a shows spectrograms corresponding to the first two verses of the poem *Großmutter Schlangenköchin*. Figure 1b displays spectrograms of two verses taken from the fourth stanza of *Kinder-Konzert* representing an example of onomatopoeia mimicking the sound of a flute and a drum. For both examples, we can verify our results from Table 2, which show that the poetry model tends to produce longer pauses between individual words than the baseline. Moreover, we observe that the F_0 contour indicated in red looks quite flat and monotonous in case of the baseline model. In contrast, the poetry model seems to produce a more vivid pitch that is closer to the human speaker.

In summary, we find that our poetry model trained on recordings of *The Boy's Magic Horn* adapts quite well to the speaking style of our speaker in terms of articulation rate and pitch. This is also in line with our first impression when listening to the generated audio samples.

5 Discussion

In the previous section, we described how we trained a TTS model on our data from *The Boy's Magic Horn* and investigated how prosodic properties are realised compared to a model trained on prose data. While our TTS model was able to learn some characteristics of our speaker's recitation style, other qualities cannot be produced by the model. In particular, the capacities of our model are very limited with regard to creative freedom and artistic expression. *Knecht, Magd, Ochs, Esel und alles, was mein ist* is an example: In this poem, a poor woman is given different animals, going from a flea to a cow, even servants, a husband, a child and a house, and she has to name each of them. In each stanza, her belongings are increased by one new item and its proper noun. In this way, each stanza becomes one line longer. In the fourteenth and last stanza, the account of property includes 14 lines, or rather 61 words. Our speaker took up the challenge of reciting this long sentence in one and the same breath, which he succeeded in doing. The recitation was thus fast and low in articulation. We would like to discuss the fourth stanza, where the woman is given a goat after she has already received a goose, a duck and a chicken in the stanzas before:

> Als ich ein armes Weib war,
> Zog ich über den Rhein,
> Bescheert mir Gott ein Zickelein,
> War ich ein reiches Weib,
> Gieng ich über die Wiese,
> Fragten alle Leut,
> Wie mein Zickelein hiese,
> Klipperbein heißt mein armes Zickelein,
> Wackelschwänzlein heißt mein Gänslein,
> Entequentlein heißt mein Entlein,
> Bibberlein heißt mein armes Hünelein.[2]

In the early stanzas of this poem, the human speaker pronounced each of the repeating verses clearly and at a relaxed pace. Later on, he quickened the speed of speech both to give expression to the repetitive structure of the poem and to master the sporting challenge of speaking the increasing list of belongings in one breath. In contrast, our TTS models lack information about such patterns related to context and produce each repetition at exactly the same tempo. As a result, the synthesised recitation of this poem might sound boring to human ears.

As a second example, we looked at the onomatopoetic poem *Kinder-Konzert* mentioned above. Here, the sound of various musical instruments is imitated. While the individual sound of each instrument is primarily predetermined by the textual form through the choice of vowels and consonants, the speaker conveyed the overall musical character of the poem mainly through speech rhythm. The TTS models realise the sounds of the instruments more as a kind

[2] When I was a poor woman, / I crossed the Rhine, / God gave me a goat, / I was a rich woman, / I went across the meadow, / All the people asked, / What my goat's name was, / Klipperbein is the name of my poor little goat, / Wackelschwänzlein is the name of my goose, / Entequentlein is the name of my duckling, / Bibberlein is the name of my poor little chicken. (Our translation.)

of enumeration, completely unrelated to the setting of the poem. The poetry model dealt with this challenge better than the baseline, since it grasped some metric patterns from the training data. This gave the resulting speech a more or less rhythmic structure, although unevenly matching the context.

While TTS models lack a sense of creativity, the previously discussed phenomena can be reproduced through prosody cloning, i.e. exactly replicating the original prosody of a recitation instead of predicting prosody in an unsupervised manner, or manual manipulation of the synthetic speech, as suggested in Koch et al. 2022. Apart from this, we found that the challenges of pre-processing the data (see Section 4.2) severely affected speech quality. Even after excluding a large number of samples from the training data, the resulting training set was still very unclean, i.e. it still contained a considerable number of mismatches between the phonetic transcription and the audio due to phonemiser errors or failures in automatic audio segmentation. As a result, the speech produced by the poetry model sounded blurred. Further, we encountered several cases of mispronunciation in our test data where the phonemiser failed to produce the correct phone sequence. For future work, it is crucial to develop tools that incorporate time and genre-specific linguistic knowledge and thus can deal with the challenges posed by archaic German.

6 Conclusion

We introduced a multi-modal corpus comprising text and speech recordings of the *Boy's Magic Horn* collection by Achim von Arnim and Clemens Brentano, embedded within the »textklang« project. The speech recordings were made in cooperation with Toni Bernhart as speaker and are aligned with the corresponding texts. We enriched this corpus with various annotations of metadata for the purpose of analysis and visualisation by means of Keshif. We demonstrated using examples how this corpus can be used in the field of speech technology by training a text-to-speech system on these data and exploring which prosodic properties can be learned from it. *The Boy's Magic Horn* is a large, canonical, multi-dimensional collection of romantic (lyric) poetry that can serve as a basis for different research questions. The synopsis of text and audio files and metadata allows us to study prosodic patterns in text and sonic realisation. We believe that this corpus is a valuable resource for various applications ranging from literary studies to natural language processing and speech technology.

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An Introductory Approach to the Reception of Charles Bukowski's Performance Poetry, Reperformed Online

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Abstract

Charles Bukowski meant his poetry to be performed. In the 1960s and 1970s his editor, Lawrence Ferlinghetti, among others, organised public poetry readings where Bukowski was the star. Some recorded his performances, which were later found on compact disks or in documentaries released after his death. Some shows were retold in books by his friends or scholars. His voice was deep and melancholic, adding value to his words. The purpose of this article is to discuss the transfer of Bukowski's poetry performance skills online. Indeed, readers of Bukowski have invested time and effort to "remediate" (Bolter and Grusin 1999) Bukowski's poetry, using a new medium to create new ways of performing poetry. Using the example of the poem "The Crunch" selected from a corpus of 30 YouTube videos created by amateurs and a selection of video excerpts, and studying the use of image and audio within these videos, I will discuss the remediation of Bukowski's poetry in a new medium and how this can affect its reception. The goal of this article is to decide which methodologies and tools could be practical in such a study. The voice is not the only tool that is used when performing online, sound and images are also taken into account. This article is introductory and reflects on the reception this new form of poetry performance, as we can either read, listen to, or watch poetry independently, or all of the above, using the `ImageJ` processor and `Praat` to study the videoed poems.

1 Introduction

Bukowski's poem "The Crunch" first appeared in the magazine Second Coming (Bukowski 1977b). It was published in the same year by Black Sparrow Press in a book of poetry entitled *Love Is a Dog from Hell* (Bukowski 1977a). Bukowski, a Californian writer of prose and poetry, worked during the day and wrote prose poetry using long free verses at night. He is quoted in memes online, and readers use his texts to create videos which they share on platforms such as YouTube. This author's texts translate well into moving images since his poetry was written to be spoken. The rhythm mattered more to the writer than verses or quatrains. He used to write while listening to classical music, such as that

by Bach, which affected his writing and made it possible for him to become a successful reader of poetry on stage. Indeed, Bukowski performed his poetry regularly from the end of the 1960s until 1980. He started onstage readings with the poet and owner of the City Lights book shop and publishing house Lawrence Ferlinghetti, who brought Bukowski to San Francisco to perform. One of his first poetry readings was recorded and made into a documentary movie directed by Taylor Hackford (1976) for a cable channel in the US, and is available online.[1] Even though Bukowski's poetry readings were successful in venues as varied as university lecture halls, theatres, or the City Lights, he abhorred the exercise and eventually quit the poetry reading circuit. His readings were a success in part due to the audience-response and the pace and tone of his voice. His poetry would become alive on stage, with a constant back-and-forth with the public described by some as rowdy, electric, eclectic, etc. (Smith 2012, pp. 46–50) Bukowski would present his work in a melancholic and reflective tone. One can hear his voice in preserved recordings or from recordings on compact disks made available on Soundcloud by Bukowski.net, a website of readers.[2] His voice was and still is highly recognisable. He would, in a way, leave his words hanging in mid-air. He would sit on a chair facing the audience. The show involved Bukowski drinking, burping and conversing with the spectators, but this did not detract from the strength of the poems uttered through his lips. The poems he read flowed effortlessly to the public, who listened and appreciated his art. His last poetry reading occurred in 1980;[3] he would pass away fourteen years later.

The author is dead; long live the author. The goal of this research is to access how Internet users read and understand poetry and how they make it their own by re-performing it, when making videos, for instance. Tony Tran (2016, p. 196) explained: "YouTube's immense popularity has created various forms of public and informal collections and archives that have allowed us greater access to overwhelming amounts of moving image media and data, including materials that extend beyond YouTube." Today, the audience response to Bukowski's poems takes a new form when they are re-performed online by Internet users. I use the word 're- perform' as the YouTube videos of Bukowski's work are what Bolter and Grusin (1999, p. 273) would consider "remediations", i.e. "the formal logic by which new media refashion prior media forms". The poems have taken on a new medium in the form of YouTube videos. Some researchers have coined the term "deformance" (Samuels and McGann 2020) to define how one could reinterpret poetry. However, the corpus of videos studied below cannot be considered this as they do not fundamentally change the construct of the poem nor deform it by altering or reordering (Samuels and McGann 2020, p. 36) the text, which stays constant in all videos, although performers instead add to it through image and sound. Even though "adding" is the third mode of "deformance" mentioned by Samuels and McGann in their article, the videos

[1] It was first shown on KCET, a local Californian channel before being released on PBS' Art-bound series.

[2] Some examples can be found on Bukowski.net. Charles Bukowski works database. Accessed December 30, 2023.

[3] The poetry reading happened at the Sweetwater music club in Redondo Beach, close to his hometown of San Pedro, California.

do not add to the structure of the poem, to the text, but to the context, to how the poem is staged online. These videos, or videoed poems, offer us a glimpse into how the reader responds to a text, a peculiarity we didn't have access to before the Internet, except through sociological studies involving interviews and polling.

2 Method and Corpus

2.1 Method

Reyes and Manovich (2020, p. 418) expressed their wish to move "from basic technical skills to the design of innovative and reflective visualization models" in their approach to cultural analytics and cultural visualisation. Media visualisation would allow the study of the videography of the poem from a new perspective. However, the approach chosen here is much more modest, closer to the study of Michelle Phan's videos and discussion boards by Tran (2016). I employ a basic study of a set of cultural data, a corpus of videos selected from YouTube, a user-generated video streaming site, to assess the use of poetry by Internet users and try to explain their interpretive work through similarities observed or, on the contrary, through the uniqueness of the videos. I will also explore the reception of the selected poem by the audience at large.

This study is a preliminary approach, particularly concerning computational studies. This article considers how the poem "The Crunch" has evolved from being read on stage or in a documentary by its author, to being uploaded to YouTube by Internet users. The study starts with a general overview of the videos taken as a whole, a "distant reading" of the videos presented online and their receptions, with a look at the comments sections for each video. This is followed by a closer reading of the videos, with a more in depth study of a set of three videos at a time for each close study using image and audio analysis. The idea behind this organisation is to "divide and conquer" the study of a corpus that involves both text, image and audio. The aim is also to demonstrate how users remediate this poem to make it their own and how varied their interpretation of the text is. As a result the analysis is threefold.

The first objective is to detail the reception of the reperformed poems using a distant reading of the videos and the comments they attracted. Distant reading taken as a whole will provide an analysis of the reception of the videos by a wide audience. This distant study is accomplished through a statistical analysis of the videos, and text-mining of the comments using `Voyant-Tools.org` (Sinclair and Rockwell 2016), an open-source, web-based application, to perform text analysis of the more than 2,000 comments under the first video.

This quantitative study is followed by a more qualitative approach, a closer viewing and listening, since the second objective is to get an in depth view of the videos, and study how images on the one hand, and sound on the other hand, are used by readers to reperform Bukowski's poem. Comparing three videos was necessary as I did not have the manpower to study all videos using computational study. I decided to bring a selective approach to my study, which has become more descriptive than a study of all thirty videos compared together

would have been. The study of the images, followed by the study of the audio, utilise another approach to reception studies, that of the content creators, in how they interpret the poem "The Crunch" into something new. The goal is to show the variations developed in the reperformed poem. For each part of the closer study, a set of three videos have been chosen for both the image and the audio analysis.

The study of the video images will provide answers to how the content creators visually recreate the poem, whether they use the same tools, the same fragmentation of stanzas, once again going from general (all the images taken together) to specific images. This study is done using `ImageJ` (Abramoff et al. 2004), an image processor, which will help compare and contrast the excerpts from three videos selected for their varied fragmentation of the images.

The study of the audio is necessary as it relates to the idea of performance, defined in the Oxford Dictionary[4] as "The action of performing a play, piece of music, ceremony, etc.; execution, interpretation". While the first close study of three videos focuses on the fragmentation of images, here, I am interested in the variations in the reading of poetry. Tany E. Clement (2020, p. 280) explained that "sound is air pressure variation over time". One could relate air pressure variation to the reading variations developed in poetry, as stated in Bernstein's (1998) introduction to *Close Listening*, citing Gregory Nagy: "to perform the song … is to recompose it, to change it, to move it." Readers online also change, move, the written text within their videos. With a closer look at the videos, I will suggest a possible way to study how each reader has their own interpretation and own rendition of the poem through their use of audio, for example a different voice or background music. The third analysis is conducted using `Praat` (Boersma and Weenink 2023), a "computer program with which you can analyse, synthesize, and manipulate speech". This program offers the possibility to make pitch and intensity analysis of the sounds selected, and analyse their waveforms and spectrograms side by side.

2.2 Data Presentation

2.2.1 Corpus Selection

The corpus of thirty videos[5] selected for analysis of Bukowski's performance poetry, re-performed online, is that of videos adapting the poem "The Crunch" (1977). Bukowski's text in each video stays, in most cases, the same, even though this poem has the characteristic of having had several versions published over the years. Most videos use the first two versions of the poem, 16 videos use the version from the magazine Second Coming, 11 videos use the version from *Love Is a Dog From Hell* (1977).[6]

Content creators avoid using the third version of the poem, published in 1999 in *What Matters Most is How Well You Walk Through the Fire* (Bukowski 1999),

[4] The definition of performance can be found at link. Accessed November 16, 202.

[5] I have used a YouTube playlist to gather the videos online before downloading them to an offline folder. YouTube Playlist, Accessed October 27, 2022.

[6] The three versions of the poem can be found online on Bukowski.net, Accessed October 27, 2022.

which is why only version one or version two is mentioned in Table 1. After the author's death, John Martin, his editor, sold Bukowski's publishing rights to Ecco Press, which would soon be purchased by Harper Collins. Martin remained editor of Bukowski's books until the 2000s when he eventually decided to retire. Readers snub the third version, which appears in none of their videos, most likely because of research completed by a community of Bukowski readers and fans online. They have discovered that the books of poetry published after Bukowski's death have been, according to them, overedited by Bukowski's former editor. They consider the last versions of his poems "stained" or "impure" and do not consider them Bukowski's poetry (Macaud 2021, pp. 319–327). This could explain why the YouTube community has also decided to avoid the last version of the poem in their video making, as Bukowski's fandom online is a tight-knit community.

Table 1 overviews the selected videos, found on YouTube with information such as title of the video, version of the poem, and number of likes, views and comments. The comments, likes and views were recorded on October 27, 2022 and are likely to change due to the changeable nature of the internet.

A corpus of thirty videos was used for the study of the reception of these videos, through the study of comments, likes and views.

The three videos chosen for image and video analysis are:

- "The Crunch by Charles Bukowski" (video 4, with the voice of Tom O'Bedlam and classic music)
- "'The Crunch' by Charles Bukowski" (video 26, with the voice of Charles Bukowski and no background sound)
- "The Crunch by (Charles Bukowski) x Kids (1995)" (video 12, with the voice of Charles Bukowski and hip-hop music)

Table 1 offers a few statistics relating to the videos. Other interesting facts are available and are developed further in the data overview below.

2.2.2 Data Overview

First, almost all the videos, 29 out of 30, use a voice-over that reads the text, making it possible to listen to the poem. The only voiceless video, using written text, is video 29 (see Table 1). The voice in each video is also pertinent and differs according to the video. We hear the singer-songwriter Bono in 10 percent of the videos, a YouTuber named Tom O'Bedlam in 30 percent of the videos, and Charles Bukowski in 33 percent of the videos. In 23 percent of the videos, we can hear the voice of the content creators speaking in front of the camera or in voice-over. If we exclude subtitles generated automatically by YouTube, the text is integrated by the creator as subtitles in half of the videos. At times, the text scrolls across the screen, as in video 15. A written version of the text, sometimes with spelling errors, can be found in fourteen of the videos selected. This is placed either at the bottom (in nine videos) or in the centre of the screen (in four videos).

Video n°	Video's name	Month-year of creation	# of comments	Version of poem	# of views	# of likes	Length	Content creator's name
1	People Aren't Good (The Crunch by Charles Bukowski)	Sep-18	2,079	1	1,701,068	52,000	4'35"	illneas
2	The Crunch Narrated by Charles Bukowski)	Jul-12	26	2	33,995	789	3'35"	AJ Ox
3	Bukowski Reads his Poem "The Crunch" (Love is a dog from Hell - 1977 Collection	Jul-17	33	2	28,207	865	3'40"	npatou
4	The Crunch by Charles Bukowski	May-22	15	1	5,728	286	6'00"	John Cogs
5	The Crunch (first version) by Charles Bukowski (read by Tom O'Bedlam)	Nov-14	29	1	59,941	1,100	4'00"	SpokenVerse
6	Why We Feel Lonely & Alienated - Charles Bukowski "The Crunch"	Apr-19	331	2	275,897	12,000	3'20"	Pursuit of Wonder
7	Bukowski reads his poem the Crunch - Charles Bukowski	Oct-21	1	2	141	3	3'48"	Boundless
8	The Crunch first Version by Charles Bukowski	Jan-21	0	1	299	19	4'13"	Unknown
9	The Crunch by Charles Bukowski	Dec-20	2	2	675	31	3'41"	Unknown
10	Bono reads The Crunch by Charles Bukowski	Jun-09	21	2	20,289	168	1'48"	19j90
11	The Crunch by Charles Bukowski	Dec-20	2	2	675	31	3'41"	Unknown
12	The Crunch by (Charles Bukowski) x Kids (1995)	May-20	64	2	2,665	305	2'40"	ClydeCreates
13	"The Crunch", Charles Bukwoski (Tradução)	Oct-20	8	1	749	41	4'33"	ヘクター
14	"The Crunch" by Charles Bukowski	May-14	0	1	136	1	3'20"	sam "lostgirL" ripples
15	"The Crunch" by Charles Bukowski	Jun-12	0	2	586	5	2'40"	Jonathan Jones

continued on the next page

Video n°	Video's name	Month-year of creation	# of comments	Version of poem	# of views	# of likes	Length	Content creator's name
16	People Aren't Good (The Crunch by Charles Bukowski)	Oct-20	2	1	547	12	4'19"	Unknown
17	The Crunch by Charles Bukowski	Jul-19	3	2	406	12	3'00"	Mr Wamble
18	The Crunch by Charles Bukowski	Jun-22	0	2	5	0	4'24"	Brian
19	The crunch - H.C. Bukowski	Jan-08	24	2	20,105	57	1'48"	assalice
20	The Crunch, by Charles Bukowski	Jun-13	6	2	5678	85	3'31"	THE PARABLE
21	The Crunch by Charles Bukowski (fragments)	Feb-21	4	1	118	10	4'19"	Daliana Pacuraru
22	the crunch // Charles Bukowski	Oct-15	6	2	5,515	89	2'42"	Unknown
23	The CRUNCH by Charles BUKOWSKI (People Aren't Good To Each Other)	Sep-21	1	2	155	4	2'51"	Unknown
24	Van Sarkissian - The Crunch (Poem by C.Bukowski)	Dec-20	2	2	73	7	4'55"	Van Sarkissian
25	The Crunch: Bono read a charles bukowski's poem sub ITA	Mar-08	7	2	25,528	120	1'54"	lapomarinis
26	"The Crunch" by Charles Bukowski	Jan-22	0	2	6	0	2'05"	Zack Blake
27	The Crunch	Jan-15	0	1	151	2	2'26"	Dom Dan
28	The Crunch: Poem by Charles Bukowski	Feb-15	0	2	294	3	1'48"	Unknown
29	The Crunch | Charles Bukowski	Dec-20	0	1	35	1	4'00"	Kobke
30	"The Crunch" Charles Bukowski	Nov-20	6	1	105	12	5'31"	MOTIVERSYM

Table 1: Youtube Videos selected for the study

Most videos also use music with a pace that differs greatly from one video to the next, although the layout of the poem is maintained. Two thirds of the videos use music. The different types of background music are hip hop (video 12), classical (6 videos), jazz (video 6), or even electric (video 24 for instance). The music creator is at times named, for example the music in videos 1 and 13 is by Max Richter-November, and in the comments section below video 2 we learn that the music was composed by Kevin McLeod.

The videos present the poem in different ways. Usually there are moving images: only 20 percent of videos use still photographs as images which, in some cases, change with each stanza. Thirty-three percent of content creators have selected video clips (from movies or contemporary events) and mixed or mashed them together. Each clip usually follows a verse or stanza. For instance, with the line "an army running through streets of blood", some videos depict either a crowd running away (video 20, 0'31") or a clip of an army during what looks like one of the world wars (video 2, 0'32" or video 6, 0'25"). The line "and there is a loneliness in this world" is often portrayed on screen by a single person looking melancholic or sad, for example at 0'46" seconds in video 4, or with nobody on screen, such as in video 2 (0'52").

Finally, a few videos are simply uploads of "The Crunch" read by Bono (video 19) or Bukowski (video 3) in two documentaries. John Dullaghan (2003) directed the documentary in which we find Bono, entitled *Bukowski: Born into This*. Charles Bukowski read "The Crunch" in The Charles Bukowski Tapes (1987) directed by Barbet Schroeder (1985). Since these videos cannot be said to have been remediated nor re-performed, I have excluded them from closer analysis.

3 A Descriptive Approach to the Reception of "The Crunch"

The reception of these videos is introduced here with a study of the comments, likes and views for the videos in order to have a broader view of what Internet users and viewers think of them.

3.1 Comments, Views and Likes

This section analyses the corpus using excel files to create graphs and charts that present a general overview of the videos created and how they received and remediated the poem. This part offers a broad view of the reception of the poem via its remediation into videos by content creators. Lev Manovich (2017, p. 62) was cautious about the importance of "*like*, share, or comment on a piece of content" when studying user-generated "content and users activities". The first video of the corpus is also the one that was the most viewed; around 52,000 users liked the video with over 1.7 million views and 2,000 comments.[7] The video is entitled "People aren't good (The Crunch by Charles Bukowski)" (Video 1 in Table 1). Figure 1 highlights the most viewed videos, the latter clearly standing out.

[7] The video was last checked on August 16, 2022.

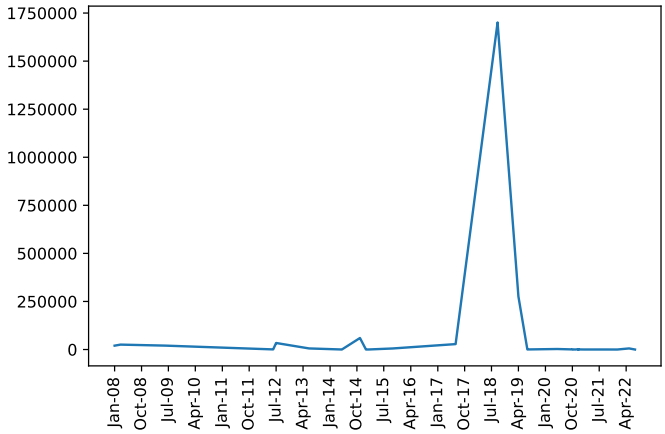

Figure 1: Number of views per YouTube video of "The Crunch" according to date of upload

Only three videos have above 20,000 views, which is more clearly visible with the exclusion of video 1 from the graph, as highlighted in Figure 2. The majority of videos have below 5,000 views, although this does not mean they do not matter. Some of the most compelling videos have indeed very few views. They seem not to matter to YouTube's algorithm. The same occurs in Figure 3, which is dedicated to the number of likes and excludes video 1, making it more legible in Figure 4. The highest number of likes is found in videos uploaded between 2012 and 2014 and there is a peak in 2019, despite the exclusion of the first video. The context of the COVID-19 pandemic could explain the rise in video uploads at the time, but the number of likes staying low except for two videos posted in 2019 could be evidence of a certain lack of interest from viewers.

Yet, Bukowski's poem and the reperformances by content creators led to reactions from readers or listeners on YouTube. In a recent *New York Times* article entitled "The Accidental Media Critics of YouTube" (Jackson 2022), the journalist explains that "One of the most popular genres of videos online is to comment on other videos online".[8] Critiquing a video online is also evidenced by the multiplicity of written comments under each video of "The Crunch" by Bukowski.

Some might assume the comments would be depreciative and troll-like, but they would be wrong. Most comments[9] praise the originality of the content, or the poem itself and its author. The document terms section of `Voyant Tools`, part of which is presented in Figure 5, reorders terms in the document provided (in this case the comments sections of the videos selected) according to Term, Count (raw frequency) and Relative Frequency. The words that keep coming

[8] www.nytimes.com Accessed June 29, 2022.
[9] Voyant-tools.org Accessed August 9, 2022.

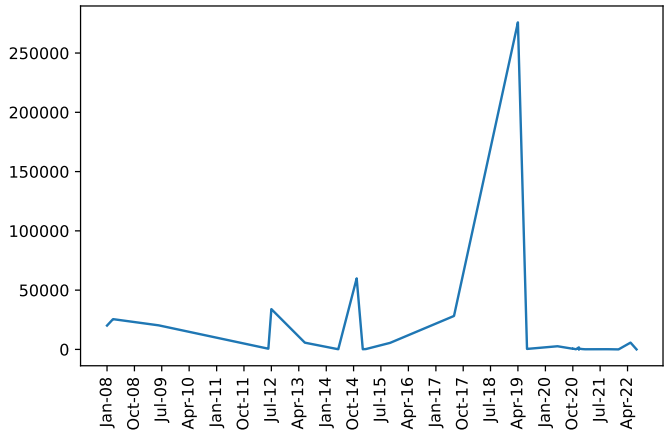

Figure 2: Number of views per YouTube video of “The Crunch” according to date of upload (without video 1)

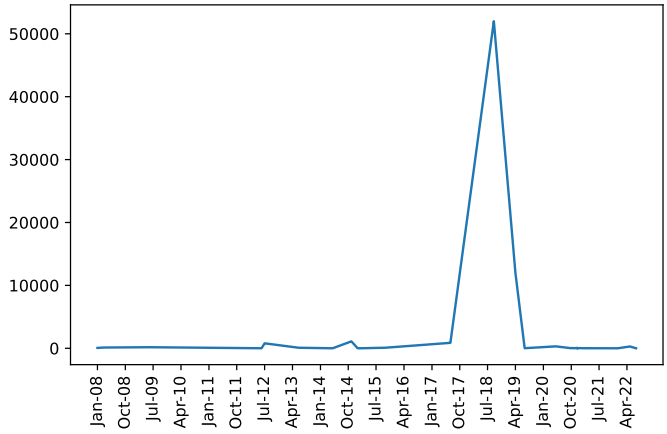

Figure 3: Number of “I Like it” per YouTube video of “The Crunch” according to date of upload

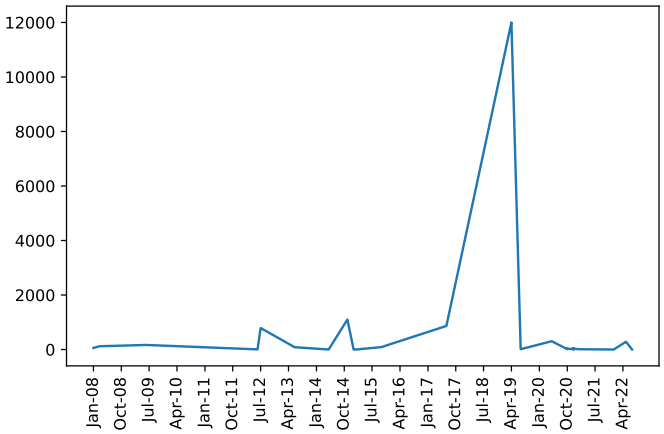

Figure 4: Number of "I Like it" per YouTube video of "The Crunch" according to date of upload (without video 1)

#	Term	Count	Relative	Trend
1	bukowski	20	15,232	
1	people	15	11,424	
1	love	13	9,901	
1	just	9	6,855	
1	need	8	6,093	
1	great	8	6,093	
1	man	6	4,570	
1	heart	6	4,570	
1	greatest	6	4,570	
1	good	6	4,570	
1	really	5	3,808	

Figure 5: Screenshot of the "Document Terms" section from `Voyant-tools`

back are the name Charles Bukowski (20), people (15), and verbs such as need (8), love (13) heart (6), great (8), and the greatest (6).

The collocates tool in `Voyant Tools` highlights a positive participatory culture; the name Bukowski is associated with words such as beautiful, brilliant, and amazing. The comments discuss the poet's work but also the content creator's work. Below the video uploaded by illneas (video 1) we read such comments as "One of Bukowski's finest works. Well imagined. Cheers!" followed by "yes, this channel is too good to be true. amazing work." These positive comments and wordings are part of the "literary sociability" discussed by Leveratto and Leontsini (2008, p. 37), which leads to the creation of a postdigital community of readers. The comments are only part of the reception study I intended

to introduce with this article. Even though the statistics and the quantitative analysis of comments, likes and views per videos highlight an interest in such videos between the years 2012 and 2019, with generally positive feedback within the comment sections, that interest stays low and none of these videos can be considered viral. However niche this interest is, I found it interesting to look further, with closer video analysis, in order to understand how content creators view the poem and remediate it via the addition of images and audio.

3.2 Video Analysis: A Close(r) Listening

Laurier (2016, p. 489), aware of the ongoing "textually centric" quality of social sciences and humanities research, even on platforms such as YouTube, found it unfortunate that no one was studying the videos themselves, which will be the last focus of our article. These videos highlight the "postdigital creative web culture [that] is the mashup" defined as "the juxtaposition of different pre-existing and/or created digital artifacts for fresh effects" (O'Halloran 2022, p. 76).

The performances evolve, and some artists or content creators have gone above and beyond to make us feel what this poem means to them. Ted Underwood (2018, p. 363) noticed that "quantitative and qualitative interpretations are mutually illuminating". Close viewing and listening to a selection of videos show the utility of working with a focused dataset to enable detailed analysis and observation.

3.2.1 Close Viewing with ImageJ Processing

Mittel (2019) explains the problems with video criticism using computational studies in terms of the challenges in "transforming moving images and sounds into data that can be treated algorithmically".

This preliminary computational analysis of amateur videos on YouTube began with the acquisition of the videos and selection of the most relevant ones for image processing. Videos without moving images in the background and videos uploaded from documentaries were excluded. As with Tran's (2016) study of 193 Michelle Phan videos, I have ripped a corpus of videos, 30 in this case. Eighteen videos from this corpus used moving images. The first thirty seconds of each of these eighteen videos were framed with the use of a free video to JPEG converter online.[10] Each video represented 140 still images, which represented overall 2,520 images to process. The width and height of the frames were standardised to 640x360 to make a montage in the ImageJ software. ImageJ allows analysis of a stack of images and possibly a more "distant reading" of all the videos framed into one picture. Unfortunately, the montage of the 2,520 images was not relevant to our search and did not help much to gather knowledge about the reception of these videos.

This "distant reading" was not a good course of action, except to notice that most readers have chosen colour to depict the poem "The Crunch" online (only

[10] www.onlineconverter.com Accessed August 17, 2022.

five videos are in black and white). Despite the gloomy quality of the poem and a dark-themed text, in which Charles Bukowski states that "people are not good to each other" and evokes war and loneliness, readers using colour might indicate that they read the poem as more positive, more upbeat. For instance, an amateur video shot with a smiley face balloon, Figure 8, seems quite optimistic and entertaining. Two other videos using colour and depicting people reciting the poem either in their kitchen or bedroom do not entail any negativity.

Other users ripped clips from movies, pictures, or contemporary events with a negative impact or a sombre or violent storyline. For instance, the screenshots of this short three-second clip presented in Figure 6 show a mashup with the main events at the 2022 Oscars after a dark screen claims "people are just not good to each other". The scene following is one in which the actor Will Smith slaps the comedian Chris Rock after the latter had made a questionable joke about the actor's wife. The next frame is a close-up of a seated, deeply angered Will Smith, while the line from the poem is set in mid-screen and the voice-over says "we are afraid".

The background colour chosen is homogeneous and could be explained by Internet culture as a whole. Roland Barthes (1981, p. 117) claimed that in the United States "everything is transformed into images: only images exist and are produced and are consumed" even before the Internet existed for everybody to produce and consume more images. Today's users are well aware that for their videos to be visible, they need to make them entertaining and appealing to viewers who are free to watch many different images on different screens.

Videos in colour can also be more readily available to amateur video makers, who only want to share their favourite poems to the biggest audience possible. Even though an ImageJ montage of the 2,520 images does not bring much to our considerations, a closer reading helps further the analysis of the videos taken not as a whole, but separately. By selecting a set of three videos, one a mashup of videos from contemporary footage, one from an amateur video, and one from a mashup of movie excerpts, we notice a fragmentation of images.

In the first montage represented in Figure 7, the title is granted ample time on screen due to the background music added to the video. The first thirty seconds of the first montage provide an impression of slow motion as if each image took a long time to appear on the screen before slowly fading. The other two montages take the speed level up a notch. Figure 8 is an amateur short film shot outdoors with a Sepia filter that makes it look as if shot many years ago. The video is a modernist view of the poem, not unlike a contemporary art piece. In the montage, the camera comes closer to an actress, her face hidden by a balloon, then hidden by sunglasses. When she takes them away, the camera also moves away from her and a smiley emoji balloon hides her face again. The fragmentation of the video is as follows: setting – balloon – actress wearing sunglasses – close up with closed eyes – camera moving back – balloon close-up.

Figure 9 is a version that completely changes the tone and pace of the poem. There is a mashup of short clips of videos one after the other with the constantly changing images and many people in each image making the video a lot more 'active'. The colours also vary, with shades of orange following shades of green, for instance. The first two montages, even though they have a variety of images,

Figure 6: Screenshots of “The Crunch by Charles Bukowski” (3’18” - 3’19” – 3’20”)

were not edited to make it look like a lot was happening in the videos. These examples demonstrate that there is not one way to edit or read Bukowski's poetry online, even though the similarities are there (the use of colour, fragmentation, subtext), at least partially.

The fragmentation of these videos depicts Bukowski's fragmented syntax, described by Dina Moinzadeh in her doctoral thesis. She explains that the fragmentation of syntax found in Bukowski's texts is a reflection of the fragmentation of bodies in Bukowski's poetry, "mutilated", and "in pieces", whether "by fear, desire, or violence" (Moinzadeh 2017, p. 300). Moinzadeh used the example of "The Crunch" when she made this statement, and it is interesting to note that a majority of the thirty selected videos of poetry have also chosen to make this fragmentation visual, cutting and piecing together clips from amateur or professional videos and including photographs, consciously or unconsciously mirroring Bukowski's syntax.

3.2.2 Close Listening with `Praat`

Charles Bernstein (1998) declared that "To be heard, poetry needs to be sounded". The last part of our study is a descriptive approach of the audio used by content-creators in their videos. One could wonder which has the upper hand in these videoed poems: the image, the music, the poem? Do these videos add anything to the poem and its meaning through their sound? Or do they veer away from the author's intended reading? I have selected three videos from the corpus, aware that "sampling [sound] implies absence" (Clement 2020, p. 280), in order to discover whether the initial pace of the poem, read by its author, changes with the addition of other sounds within the video, and/or when the poem is read by another.

Yves Bonnefoy (2008, p. 9), when discussing the translation of poetry, explained that poetry needed to be "heard by its reader, participatory, relived in an experience far beyond the words to which the reader sees it resorting".[11] Bukowski's musicality, rhythm and voice were described as early as 1963 by Corrington (1963, p. 5) in his introduction to one of the first books by Bukowski, *It Catches My Heart in its Hands*. These qualities were highly characteristic of Bukowski according to Corrington.

Bukowski's poetry focused more on rhythm than on the rules of poetry. Marit J. MacArthur (2016, p. 39) pondered the religious influence of poetry reading by poets "absorbed into the academy", yet Charles Bukowski's reading did not follow this trend. He was famous for staying out of academic culture, even despising it. He did perform poetry in front of students at universities, but never aimed to be part of academia. His reading is as a result perhaps more personal and spontaneous, and one may wonder whether the reperformances online are trying to capture his aura.

Majit MacArthur (2016, p. 43) stated: "Analyzing intonation in recorded poetry readings—taking into account aurality (how the audience listens) and orality (how the poet speaks)—and making such analysis intelligible as literary scholarship can be daunting". Analysing poetry reading that has background

[11] My translation.

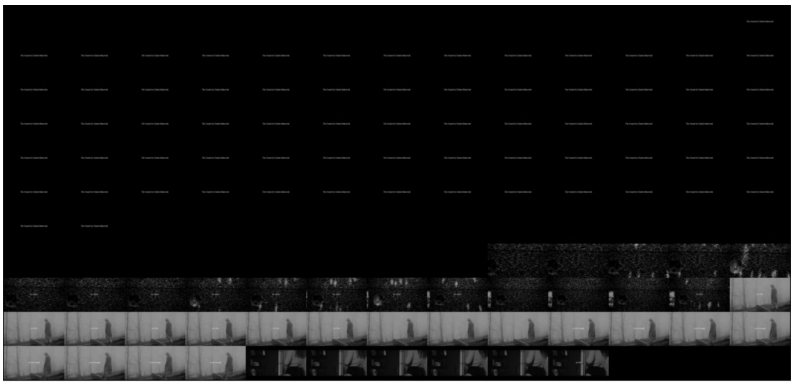

Figure 7: ImageJ Montage from “The Crunch by Charles Bukowski”

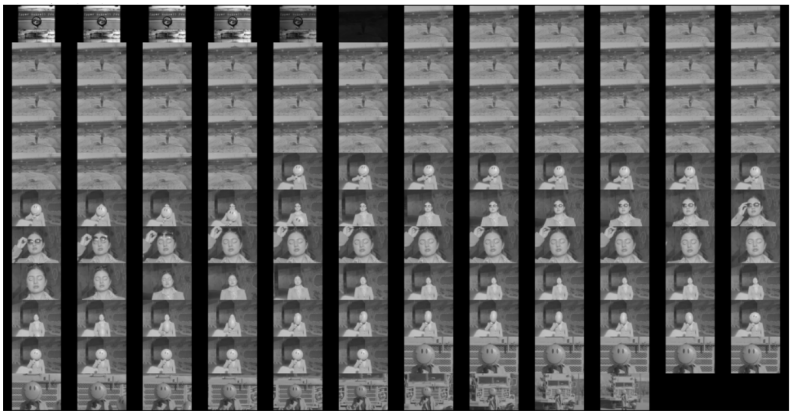

Figure 8: ImageJ Montage from “‘The Crunch’ by Charles Bukowski”

Figure 9: ImageJ Montage from “The Crunch by (Charles Bukowski) x Kids (1995)”

music is even more daunting. Here I offer only a glimpse into the study of sound that can be produced using `Praat`, a language program that analyses and visualises how or if sound changes with the editing made in readers' videos, offering analysis of the rhythm and pace of each adaptation of the poem. `Praat` makes it possible to create a spectrogram and visualise pitch. I have compared the sound in three videos using 10 and three second clips, looking at pitch and rhythm in order to visualise the differences in how Bukowski and his remediators sound out the poem. I also wanted to note what mattered more, whether it was the poem or the music. Fleming (2017, p. 437) stated the importance of choosing "the right passage" for close reading to be hermeneutically efficient. The first, 10 second, section of audio is the poem lines "too much / too little / too fat / too thin / or nobody". The three-second excerpts are from the line "people are [just] not good to each other" from the same videos, to improve visibility. The word "just" is in brackets as Tom O'Bedlam's voice uses "just", as he uses the first version of the poem, a much longer version, while the poem read by Charles Bukowski in the other two excerpts are from the second version of the poem. I have selected the line "people are [just] not good to each other" as it is one of the most famous of the poem and is also repeated regularly in the comments section below the videos. The content creators' choices of audio are interesting for similar reasons to the choice of moving image: it offers a new take on how to read the poem.

> "too much, too little, too fat, too thin, or nobody"

The first excerpt is from video 26, which used a sample of Charles Bukowski reading "The Crunch" with no background music. There is no "conflict between sincerity or theatricality" (MacArthur 2016, p. 40), only sincerity in his reading. This first video has been selected as the original version, how we imagine the poem intended to be read, the original spoken version of the poem. The second is from a video using Tom O'Bedlam's voice (video 4), with a piece of classical music in the background. The last audio is a mashup of movie clips, with Bukowski's voice and hip-hop music in the background (video 12). Readers work on the audio as editors. Bukowski had created a specific rhythm in his reading of "The Crunch" in the first sound in Figure 10, the tempo is slow, and the voice is interspersed with silence.

Charles Bernstein (1998) stated that "An actor's rendition, like a type designer's 'original' setting of a classic, will not have the same kind of authority as a poet's own reading or the first printing of the work". Audio extracted from the video by O'Bedlam in Figure 10 seems to use a lower tempo when sounding out the poem, and background music is added to the video, as seen in Figure 10. The spectrograms in Figure 11 help us notice that the voices of Bukowski and O'Bedlam have a similar pace when sounding out the lines. However, the voice itself seems to be a lower pitch than Bukowski's, as can be seen in Figure 12. The spectrogram in Figure 11 from the last video makes it impossible to hear Bukowski's voice. It is as if the music takes over the poem, which is confirmed in Figure 12, where the poet's voice becomes almost invisible in the third video. The pitch in the second video is also hard to see, due to the background music again taking over the sound. The sound in Figure 10 and the spectrograms in Figure 11 highlight the difference in variations, from a very distinct voice to a

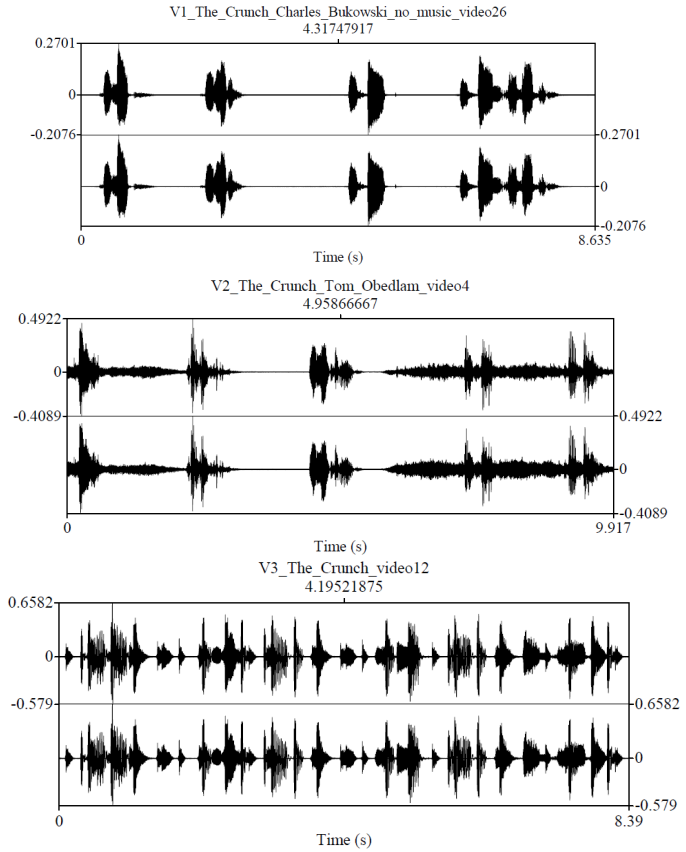

Figure 10: 10-second sound excerpts from video 26, 4 and 12

voice mixed with music, to the music taking over the voice and the tempo of the poem.

As Underwood (2018, p. 358) put it, and as the user who created this video proves, “the editor of a music video can overwhelm a viewer with rapid jump cuts”, which happens in the third video sounding out the lines “too much, too little, too fat, too thin, or nobody”, matching the image fragmentation from the video.

> “People are [just] not good to each other”

To confirm the observations from this first close analysis of audio waves, three seconds of each of the videos where each voice says the line “People are just not good to each other” were ripped to assess the divergence in sound, or lack thereof. Some creators used this line in the title of their videos so it seemed interesting to stress this quote in the audio interpretation. As noted earlier, the voice tone of O’Bedlam is a lower pitch than that of Bukowski, perhaps due to a better recording device (Bukowski’s voice was recorded in 1987, while O’Bedlam was recorded with 21st-century equipment) as well as to the natural tone of

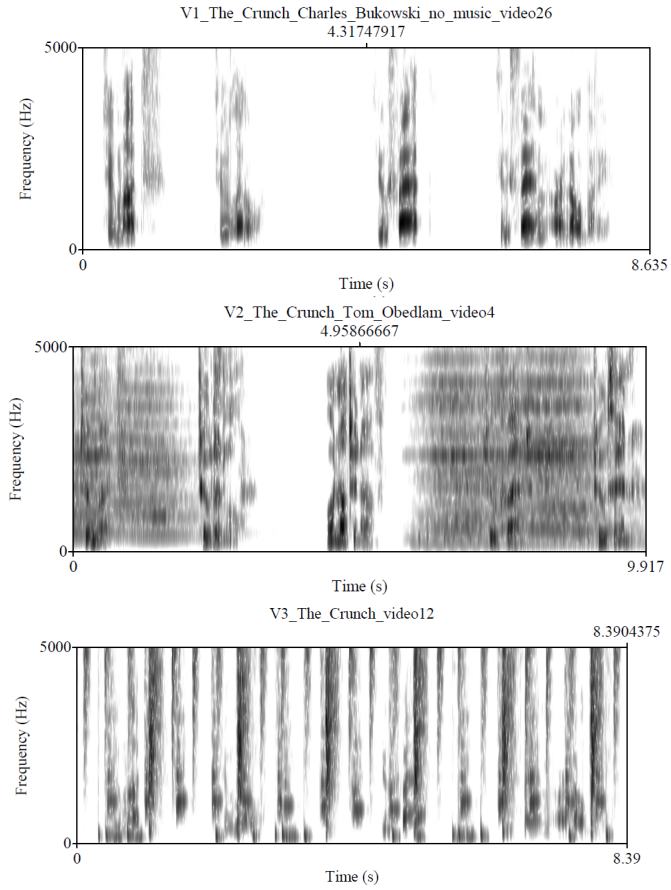

Figure 11: 10-second spectograms from video 26, 4 and 12

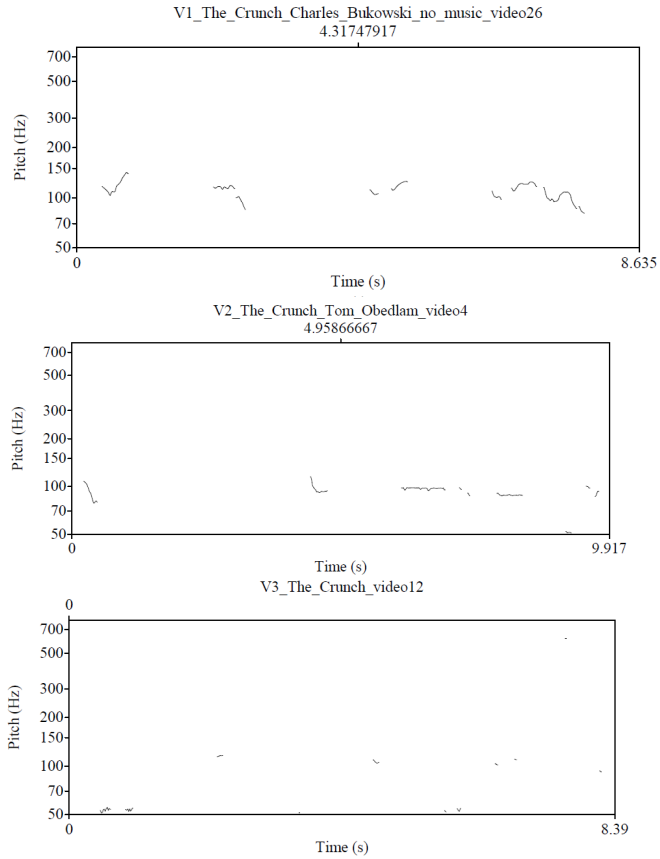

Figure 12: 10-second pitches from video 26, 4 and 12

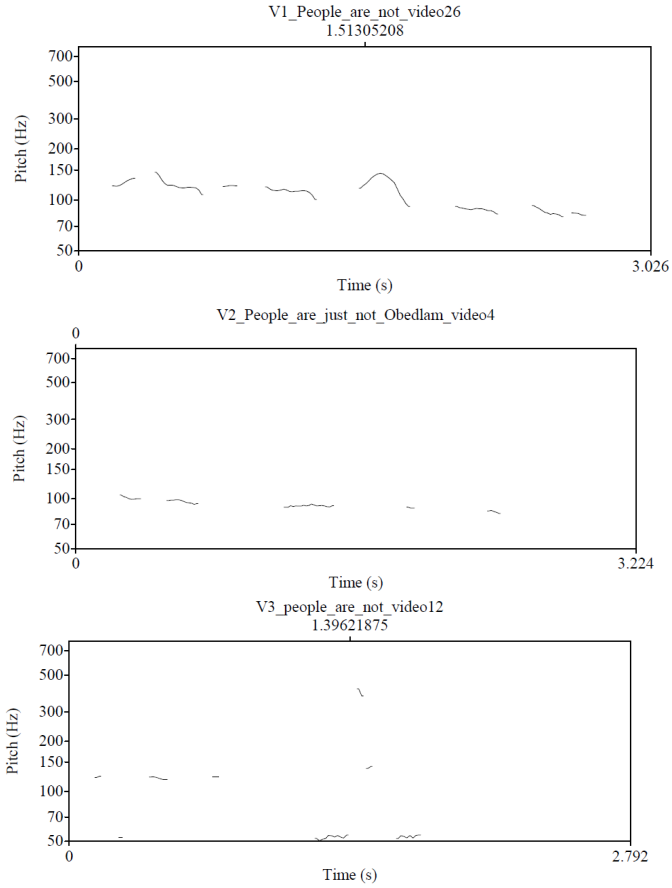

Figure 13: "People are [just] not good to each other": pitches from videos 26, 4 and 12

both men. The spectrogram allows for more straightforward visualisation of the selected audio. The two first versions in Figure 13 show the difference in pitch.

The frequency varies between Bukowski and O'Bedlam's recordings, mainly due to the addition of music in the background of the second video. In the last video studied, the voice frequency is the same as Bukowski's original video since it used Bukowski's voice mixed with hip-hop music, although his voice is not clearly visible in either spectrogram or pitch images. O'Bedlams' voice changes the visual in Figure 14 by saying the words differently to Bukowski: more slowly, avoiding gaps and seeming to follow the classical music instead. It helps us see, without having to hear, the difference in audio of each video, and confirms the fragmentation in the third video. The lack of clarity in the sound is clear in the spectrogram and pitch of the last two videos in Figure 15 and Figure 13, where the amplitude of the background music makes analysis of the voice difficult.

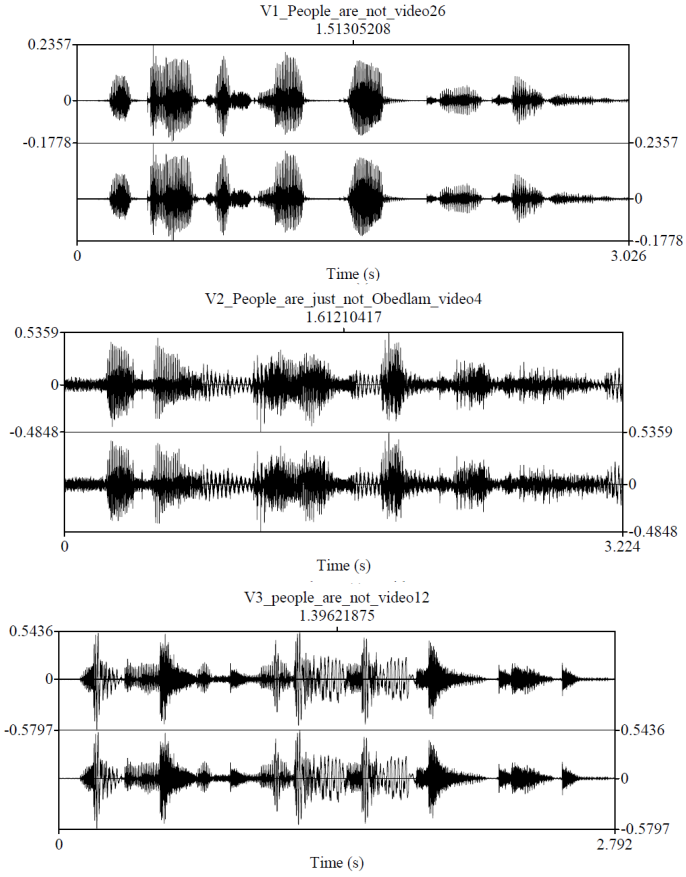

Figure 14: “People are [just] not good to each other”: sounds from videos 26, 4 and 12

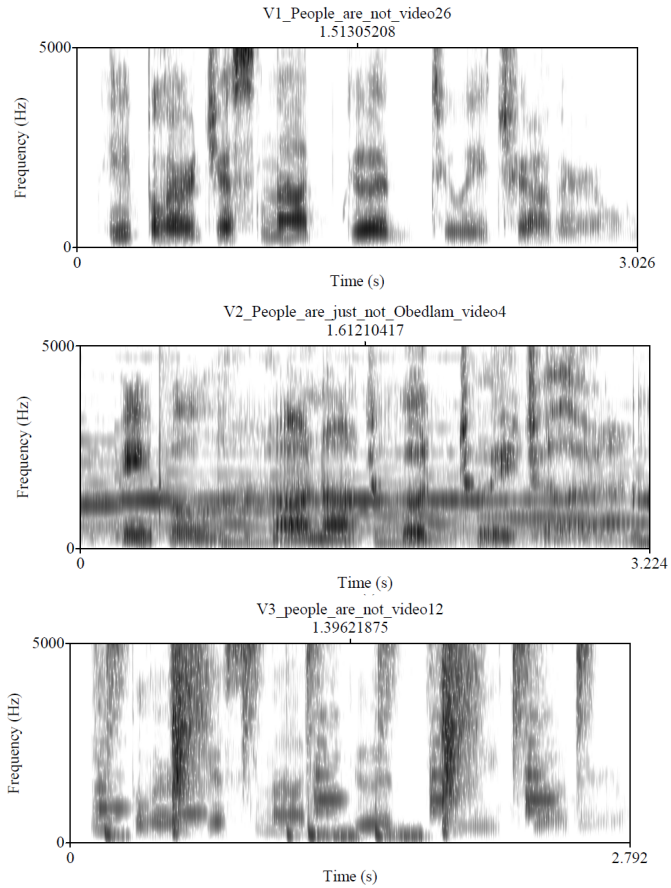

Figure 15: "People are [just] not good to each other": spectograms from videos 26, 4 and 12

As Patrick Suppes states, rhythm and meaning work in relation to poetry, particularly from a scientific perspective:

> the brain's processes phase-lock to a poem's rhythm; this rhythm is often not consciously noticed by the listener or reader. In the case of music, the phase-locking has, on many occasions, a very obvious behavioral manifestation, in tapping, swaying, singing, or what have you, to the rhythm of the music. Poetry is, with some exceptions, more subtle, but the rhythm is still there, and it produces something similar in the brain. (Suppes 2020, p. 165)

We could wonder whether voice frequency could lead to the study of the emotions readers, or in this case listeners, feel. Adding music to the poem's original rhythm can affect the interpretation of the poem, as can be seen in Figures Figure 10 to Figure 15, and its reception. This overview of sound using `Praat` compared and contrasted videos in order to represent differences in sound, if any, that are made visible by the spectrogram and pitch. As a result, we can imagine that further analysis of the sound and rhythm of more videos could highlight what content creators wanted the viewers to feel when listening, i.e., uplifted, calmed, thoughtful, or any other emotions related to rhythmic editing.

4 Conclusion

Even though there is no one clear-cut way of re-performing Bukowski's poetry, we notice similarities through video mining and analysis. However, the intent and the result of the video-making genre for poetry give rise to different outcomes in performance styles.

Franco Moretti (2017, p. 6) states that "Algorithms generate new facts, whose interpretation continues however to rely on a different hermeneutic tradition". I have decided to study images, audio and text separately, 'deforming' the reperformances into fragments for examination. Doing so helped provide a set of visuals and graphics that show the different choices readers make, as well as the similarities in those choices. I could have ripped and compared each video side by side, with all the many different traits each has. The difficulty would have been to turn this information into useful data. By parsing the videos into constituent elements I hoped to understand the amateur video-making of readers who are readapting poems and sharing them online. So, is the future of poetry visual? With a more quantitative approach and the extraction of data from text, images and audio there is a chance to understand better how 'active' readers receive and re-enact poetry and what their ways of either improving or expanding upon it are while trying to retain the text's initial beauty.

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Rhyme in Contemporary Estonian Popular Poetry

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Abstract

The aim of the study is to examine the structure of rhymes in different genres of Estonian popular poetry since the 1990s, that is, from the same period in which rhyme began to disappear from literary poetry in Estonian while surviving and even developing in popular poetry. The analysis derives from the approach proposed by Jaak Põldmäe, which takes into account the characteristics of the prosody of the Estonian language. On this basis, we have distinguished four levels: phoneme, prosody, stress pattern and word ending, and analysed these aspects in the rhymes of poetry texts by four authors from different areas of popular culture, including one songwriter (Mait Vaik), two hip hop artists (Genka and Metsakutsu) and the most popular Estonian Instagram poet Lauri Räpp. The results are compared with data from literary poetry from different periods.

1 Introduction

While free verse has reigned in Estonian literary poetry since the last decades of the 20th century, where instead of the regular rhyme patterns only occasional euphonic rhyme occurs, in popular poetry rhyme has continued to play an important role. The aim of the present study is to examine the occurrence of rhyme in different genres of popular poetry since the 1990s, that is, from the same period in which rhymed poetry became increasingly marginal in literary practice. Our material includes, on the one hand, orally performed popular poetry—the lyrics of rock and hip hop music—and, on the other hand, Instagram poetry, which has emerged in the second half of the 2010s. The method of study is comparative-statistical analysis: rhymes in popular lyrics are analysed in comparison with literary rhyme culture in order to highlight their specific features, with attention paid to the characteristics of the different styles.

2 Definition of Rhyme

Since the beginnings of Estonian literary poetry, issues relating to rhyme have played an important role in discussions of poetics and poetry, and different rhyming strategies have been one of the important defining features of various literary schools and periods.[1] Until the last quarter of the 20th century, in the theory of rhyme, views favouring full rhyme prevailed, according to which only rhymes with the main stress syllables (disregarding secondary stress) could be considered rhyme (Bergmann 1878; Visnapuu 1932; Maantee 1959; etc.). There were also a few authors (e.g., Adams 1924) who, on the contrary, insisted on moving away from the traditional full rhyme canon and called for a variety of imprecise rhymes to enrich the worn-out rhyme repertoire. What was common for these views was that they were both normative: theorists are the ones to determine the correct or valued rhymes that poets should use in their creation.

The present study is based on the approach by Jaak Põldmäe, the eminent Estonian scholar of versification, who laid the foundations for a descriptive view of rhyme: according to Põldmäe, all of the phonemic repetitions that poets use as rhyme must also be regarded as rhyme by literary scholars. To this end, Põldmäe extended the definition of rhyme, including for the first time in Estonian rhyme research phonemic repetition carrying a secondary stress: "We consider as rhyme the correspondence fixed in particular verse positions between certain stress groups or parts of their phonemic compositions"[2] (Põldmäe 1978, pp. 255–256). However, Põldmäe's definition does not explicitly include rhymes in which the nucleus falls on an unstressed subsequent syllable, despite the fact that such rhymes have been present in Estonian poetry at least since the 19th century, and that Põldmäe's own survey includes examples of this type (e.g., Aleksander Suuman's "Kaugelt meenutab vast h***ane***. / Kujult küll pole sarn***ane***"). Thus, there is a practical need to expand the definition of rhyme to accommodate this possibility, and so in our analysis we have considered the concordances of unstressed final syllables as rhymes.

On the basis of the material sampled from poetry of different Estonian genres and periods, for the purposes of the present analysis the range of phenomena considered as rhyme has been further extended to include cases of phonemic repetition at given positions rhymes involving totally unstressed syllables which have been conceived as rhymes in Estonian poetry, at least from the 19th century onwards. Therefore, in this study, rhyme is considered to be any fixed phonemic repetition with artistic intention. A rhyme can consist of the repetition of syllables, feet and words carrying a primary and/or secondary stress, as well as unstressed units; different stress groups can also rhyme with each other, as can stressed and unstressed phonemic groups.

[1] For Estonian theories of rhyme and the development of rhyming practices, see M.-K. Lotman and R. Lotman 2022, 2024.

[2] In this and other quotations from Estonian, the translations are by the authors of the paper.

3 Methodology: A Four-Level Analysis of Rhyme

Although, in addition to broader theoretical approaches, the question of rhyme has also been addressed specifically in poetry criticism (compare, for instance, Aavik 1921), no comprehensive statistical analyses of the rhyme structures actually used in Estonian poetry have been carried out so far. For the present study, we have developed a methodology that will help describe and systematise the formal aspects of Estonian end rhyme by means of statistical analysis. Based on Põldmäe's approach (Põldmäe 1978, pp. 256–260), which takes into account the characteristics of the prosody of the Estonian language[3], we have analysed all rhymes on four levels: phonemic, prosodic, stress pattern and word ending.

At the first, phonemic, level, we analyse the degree of precision of rhyme partners according to their phonemic composition. Here we distinguish between exact rhymes[4] in which all phonemes coincide from the vowel of the (first) rhyme nucleus to the end of the rhyme, and inexact rhymes with various phonemic deviations. Thus, the analysis of phonemic composition leaves aside the prosodic features (primary and secondary stress, quantity) and focuses only on phonemic correspondences. A similar definition of full rhyme was first introduced by Harald Rajamets, who emphasised the important role of rhymes with secondary stresses in Estonian poetry, while at the same time being excluded from the theoretical level. "Rhymes with secondary stresses do not form a stock of formal devices that are isolated or need to be kept separate, but in practice occur together with and alternately with rhymes with primary stresses; nor do they belong to a different stylistic domain as near rhymes in relation to full rhymes; theoretically, however, the same standards, laws and requirements apply to them in general as to rhymes with primary stresses" (Rajamets 1959, p. 1576). In this study, following Rajamets's and later Põldmäe's understanding, rhymes with the exact phonemic correspondence from the rhyme nucleus onwards (for instance, ***algus*** : ***valgus)*** are considered to be exact on the phonemic level. In the case of near rhymes, we have distinguished between rhymes with different vowels—also determining whether the vowels differ in the stressed syllable or the unstressed part of the rhyme—and rhymes with consonant differences, again ascertaining whether the difference is on the boundary of the stressed syllable or the unstressed syllable.

At the second level, which focuses on prosodic features, we examine the quantity degrees and word stress in the rhyme units. Here, exact rhymes are those where both the quantitative and accentual structure coincide. In terms of stress structure, differences can occur when syllables or feet carrying a primary and secondary stress are rhymed. Occasionally, we have also found completely

[3] On prosodic issues of rhyming in Estonian see Lotman, M.-K., Lotman, R. 2022: 135-136; on quantity in Estonian versification see M.-K. Lotman and M. Lotman 2013, pp. 245–248; on primary and secondary stresses in Estonian verse see M. Lotman and M.-K. Lotman 2018, p. 99; on the application of this model to Estonian rhyme culture see M.-K. Lotman and R. Lotman 2024, pp. 245–248.

[4] A subtype of exact rhyme is identical rhyme, yet their semantic impact differs entirely. In one case, opposition or parallelism arises between two distinct yet maximally similar sounding words, whereas in other case there is repetition on both levels. Therefore, they are treated separately in statistical analysis.

Author	Number of verses	Number of rhyming units
M. Vaik	521	226
L. Räpp	500	202
Genka	535	218
Metsakutsu	523	206
Total	2,079	852

Table 1: Sample sizes and rhyming units by author

unstressed rhymes, which we have analysed as a separate group. Deviations on the prosodic level can also occur when units with different quantities are rhymed: Estonian verse generally has rhymes of first and second quantity or second and third quantity; rhyming with units of first and third quantity is exceptional.

At the third level of the analysis, we looked at stress patterns as a whole, with the aim of identifying the rhyming units in the samples. Here we distinguished between, on the one hand, units carrying primary and secondary stress and, on the other hand, unstressed units and their combinations.

At the fourth level, we have taken into account word boundaries, distinguishing between single word rhymes and compound rhymes, i.e., rhymes consisting of several words. In addition, we also distinguished here between isosyllabic rhymes and semi-rhymes in which the syllable counts of the rhyme partners do not coincide. Here, divergence from exact rhyme occurs mainly when rhymes are asymmetrically divided by word boundaries (for example a compound rhyme with a single word partner).

We are the first to apply such a detailed four-parameter model of rhyme analysis in Estonian verse studies; in fact, as far as we know, thus far there have been no detailed rhyme composition studies at all. It should be emphasised that our analysis is limited to the sound structure of rhymes, issues of the semantics of rhyme are beyond the scope of the present study.

4 Material of the Study

Our analysis is based on the poetry texts of four authors. These authors are representatives of different areas of popular culture, including one songwriter (Mait Vaik), two hip hop artists (Genka and Metsakutsu) and the most popular Estonian Instagram poet Lauri Räpp. The texts created by the first three authors were first and foremost written for oral performance.

We selected at least 500 verses from each poet (since we consistently included complete poems, most samples are somewhat bigger, with a total of 2,079 verses altogether). All rhymes in the samples were annotated by the authors of this paper, relying on the model described above. The data was then processed and analysed. To minimise potential subjectivity, all samples were double-checked by both authors of the article. Table 1 shows the sample size and the number of rhyme units for each author analysed separately.

The results are compared in the discussion section with data from literary poetry from different periods, the samples of which, 2,208 verses in total, were

analysed following the same principles as that of popular poetry. For this study, the representative of the mid-19th century is the Estonian National Awakening era poet Friedrich Reinhold Kreutzwald (624 verses). The late 19th and early 20th century is represented by the outstanding poet Anna Haava (538 verses), while from the mid-20th century we included both Ain Kaalep (555 verses), a representative of the purist school in rhyme theory, and Artur Alliksaar (491 verses), who had a more liberal approach to rhyming canons.

5 Results of the Analysis

5.1 Rhyme in Estonian Rock and Punk Music Using Mait Vaik's Lyrics as an Example

Mait Vaik (b. 1969) is a poet, musician and songwriter. In the 1990s, he did not publish his poems in separate books but wrote lyrics for the Estonian rock bands Vennaskond and Metro Luminal, and, later, also for Sõpruse Puiestee, Kosmikud and other groups. Starting out as an alternative punk band in the 1980s, Vennaskond became a pop punk band in the 1990s and topped the music charts. Mait Vaik's lyrics, like those of frontman Tõnu Trubetsky, expressed the decadent and nihilistic mood of the youth of the time and were written in regular meters and rhymed verse. The sample for this study consists of Vaik's lyrics written for different Estonian bands in the 1990s and 2000s.

The distribution of phonemic correspondences in Mait Vaik's rhymes is shown in Figure 1.

The phonemic composition of Mait Vaik's rhymes shows clear preference for two structures: about one third of the rhymes used are exact rhymes (***ärkan*** : *m**ärkan***, I wake up : I notice), with an even higher proportion of rhymes (over 35%) having different end consonants in the stressed syllable (*v**ära**vad*** : *t**äna**vad***, gates : streets). Some other license is taken as well, such as deviations in the border consonants of unstressed syllables (*v**ähe**ks* : *t**ähe**d*, scarce : stars) and in the vowels of stressed syllables (*ö**id*** : *va**id***, nights : just). The rhyme can also deviate in this way in the poem in consequent lines, even throughout the entire stanza. Compare the following lines from Mait Vaik's song "XX sajandi lapsed":

> Oleme teel oma eelmisest sajandist autoga seisma mis j**äi**
> ja keegi ei peatu, meist keegi ei hooli, teeperv koduks nii s**ai**.
> On lõppenud kütus ja otsas on lootus, tagaistmel on kivine k**õrb**.
> Kui üldse minna, siis sihiks saab olla vaid asfaldil värelev t**õrv**.
>
> We're on the road with our cars from the last century, stuck
> and nobody stops, nobody cares about us, the side of the road has become
> our home.
> Out of fuel and out of hope, in the back seat is a stony desert.
> If we go at all, the destination can only be the tar shimmering on the asphalt.

No deviations of vowels in the unstressed syllables occurred in Mait Vaik's sample. In occasional cases, there are several deviations at the same time in one rhyming unit (presented together as "other deviations" in Figure 1). In most

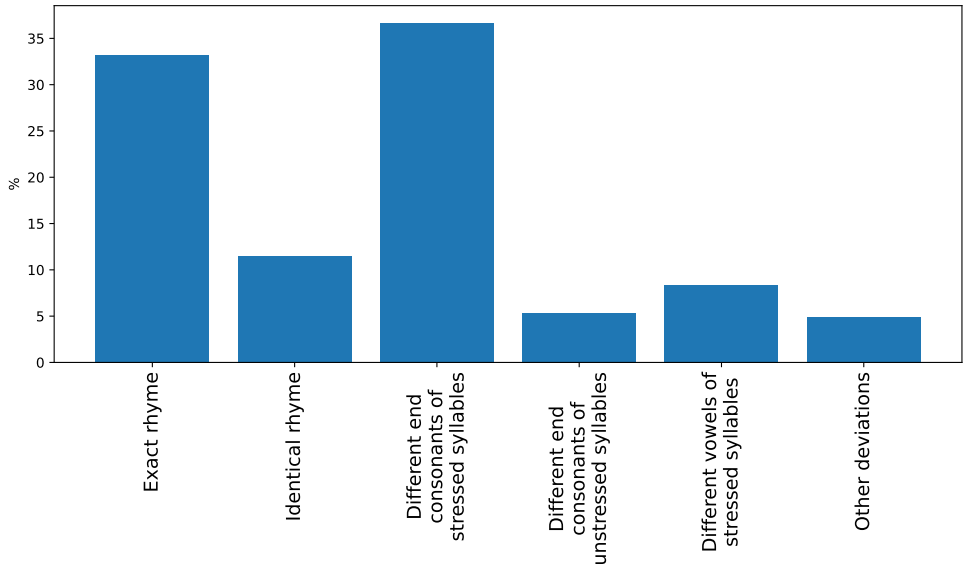

Figure 1: Phonemic level in Mait Vaik's rhyme structure: percentage of rhymes per rhyme-type in Vaik's lyrics from the 1990s and 2000s

of these cases, the deviations in vowels of stressed syllables are combined with deviations on the boundaries of either stressed or unstressed syllables. The statistics presented exclude orphan rhymes that do not have rhyme partners and therefore cannot be considered rhyme units; they account for about 12% of the verses.

Figure 2 shows the data of prosodic correspondences in Mait Vaik's rhymes.

The analysis reveals that Mait Vaik prefers prosodically exact rhymes, which can be seen in nearly 90% of the rhyme units in his sample. The deviations mainly occur when syllables with primary and secondary stresses are rhymed (*t**ikk*** : *igav**ik***, *l**umi*** : *hommik**uni***, match : eternity, snow : until the morning), while divergences in quantity are very rare in Vaik's rhymes.

Figure 3 shows the proportion of primary and secondary stresses in Mait Vaik's poetry.

The data show that Mait Vaik's poetry is dominated by rhymes carrying the primary stresses; that is, his rhyme unit is preferably a lexical rather than a morphological structure (***palve*** : ***talve***, prayer : winter). In about 10% of cases, however, he also allows a unit carrying a secondary stress to partner the primary stress rhyme, although in such cases the correspondence is usually formed with the second component of the compound word, that is, again a lexical unit (***öö*** : *käsit**öö***, night : handcraft). The correspondence of two units carrying a secondary stress occurs in his poetry only as rare exceptions (*jäädag**i*** : *kaitseg**i***, stay : defend).

As for the word boundary structure of rhyming units, Mait Vaik does not take any liberties here and compound rhymes are not found in his sample.

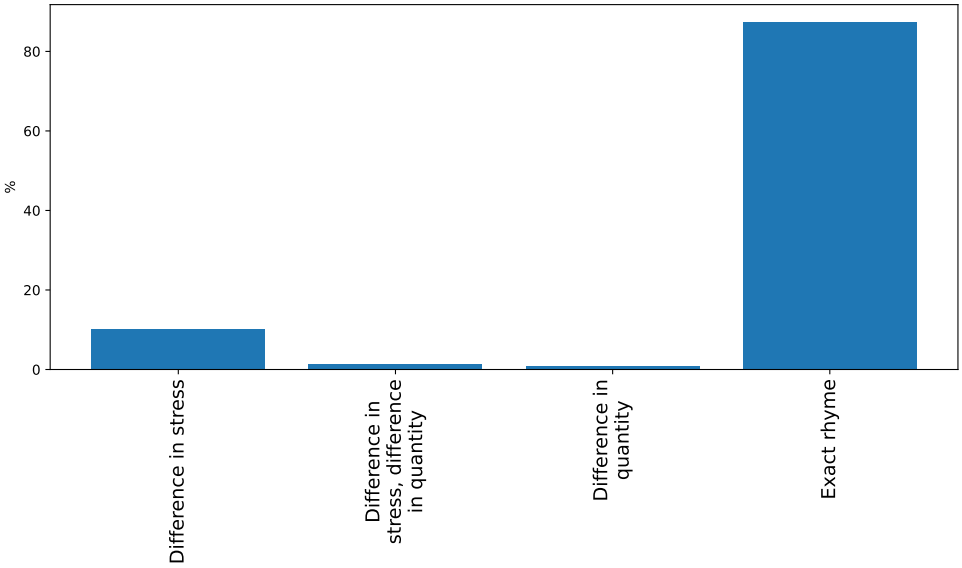

Figure 2: Prosodic level in Mait Vaik's rhyme structure

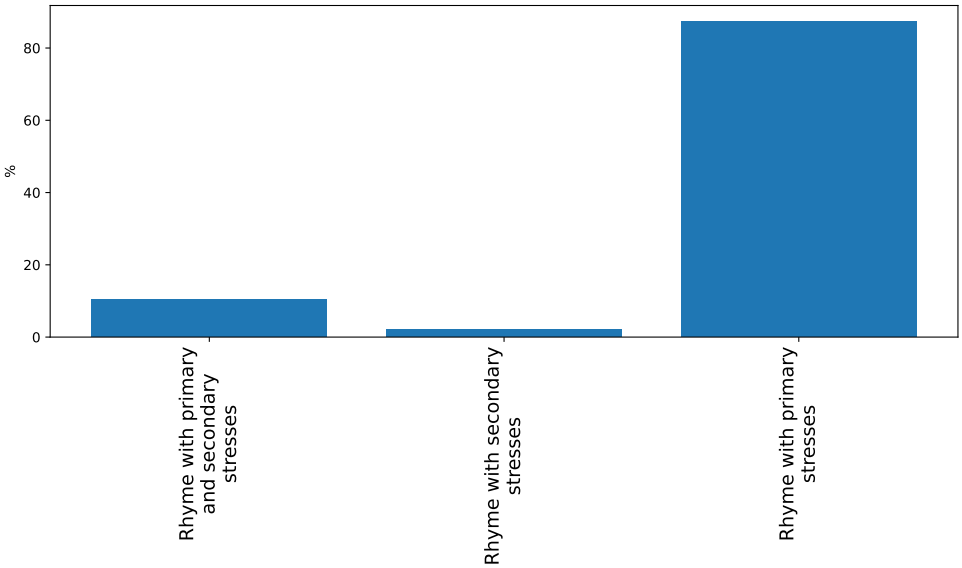

Figure 3: Stress patterns in Mait Vaik's rhyme structure

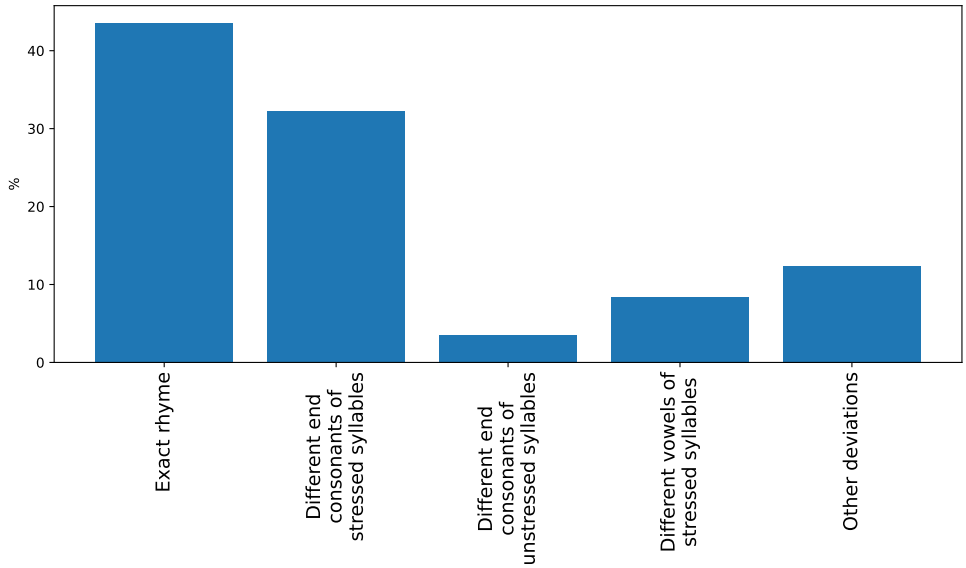

Figure 4: Phonemic level in Lauri Räpp's rhyme structure

5.2 Rhymes in Lauri Räpp's Instagram Poetry

Similar to the English-speaking world, social media poetry has gained popularity in contemporary Estonian poetry; in particular, that of Instagram, although this culture arrived in Estonia with some delay.[5] Today the most popular Estonian Instagram poet is Lauri Räpp (b. 1977), who started publishing poetry on his profile in 2018; as of the end of 2025 he has 29,500 followers. In 2021, Räpp published his social media poems in a book, and for two consecutive years this poetry collection has topped the book sales charts not only in the category of poetry but in all genres. He is indisputably one of Estonia's best-selling poets of all time. His poems can be divided into two categories: free verse texts that resemble motivational quotes, and rhymed poetry in various meters, mainly depicting the moods of the lyrical self and images of nature. The poems belonging to the latter group are the subject of this study.

Data on the phonemic correspondences in Lauri Räpp's rhymes are shown in Figure 4.

Similarly to Mait Vaik's rhymes on the phonetic level, Lauri Räpp also has two main preferred rhyme types: exact rhyme, and the rhyme with differences in the end consonants of stressed syllables. However, the proportions are different: exact rhyme (***valu*** : *paljaj**alu***, pain : barefoot) occurs more frequently, comprising almost 45% of the rhyme units, while rhymes with deviations in the end consonants of stressed syllables make up about one third of the rhyme units. Compare, for example, the following verses:

[5] For Estonian social media poetry see R. Lotman 2021.

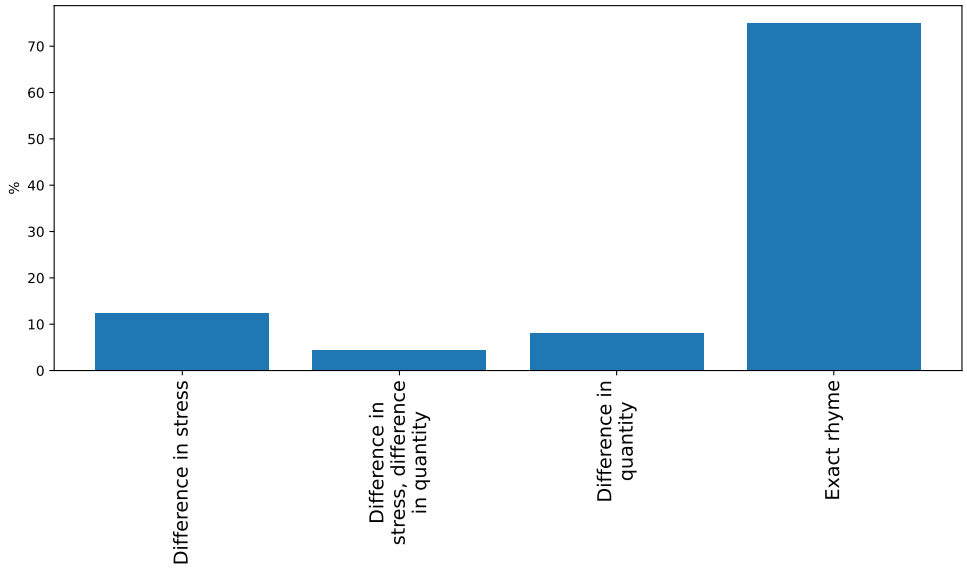

Figure 5: Prosodic level in Lauri Räpp's rhyme structure

on linna jõudnud südaj**uuli**
ja lumest näeb vaid **und**
kerkib plikadel naeratus k**uuni**
lööb tantsides silmist neil t**uld**

mid-July has come to the city
and the snow is but a dream
the smiles on the girls' faces rise to the moon
when they dance, their eyes light up with fire

In Räpp's rhymes, deviations both in the end consonants of unstressed syllables and differences in the vowels of stressed syllables (***võlu*** : ***valu***, charm : pain) can also be seen, while there were no rhymes with differences in the vowels of unstressed syllables in his sample. In more than ten percent of his sample, several deviations occur simultaneously. In the majority of such cases, different end consonants in both stressed and unstressed syllables are allowed at the same time (***kurbus*** : ***tulnud***, sadness : come), while in the rest of the rhymes we see joint incidence of different vowel and consonant deviations in both stressed and unstressed syllables (***midagi*** : ***sedasi***, something : like this). The proportion of orphan rhymes is even higher in Räpp's than in Vaik's poetry: about 19% of the selected verses are unrhymed.

As regards the prosodic level in Lauri Räpp's rhymes (Figure 5), here again prosodically exact rhymes prevail, although in comparison with Mait Vaik's rhymes the incidence of such rhymes has diminished to 75%. Räpp also allows for deviations in stress (vesi : kahekesi, water : the two together) and quantity (jättes : kätes, leaving : in the hands), and sometimes combinations of these (üleval : all, up : down).

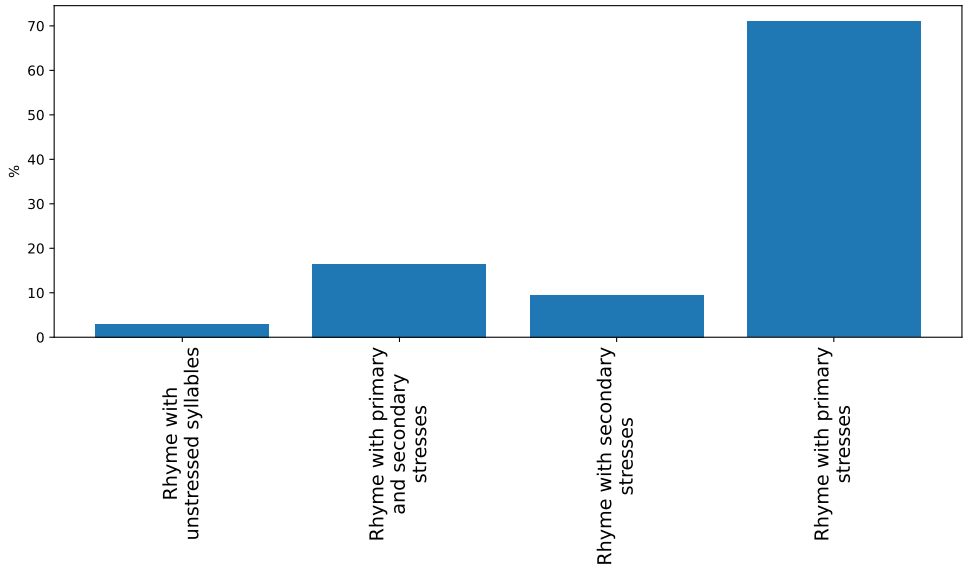

Figure 6: Stress patterns in Lauri Räpp's rhyme structure

In Lauri Räpp's poetry, rhymes carrying the primary stress also prevail, but with a much lower incidence than in Mait Vaik's poems (Figure 6). Almost 10% of the rhymes carry only secondary stress, and even more—about 16%—combine segments with primary stress and secondary stress. A few of the rhymes in our sample have no stress signal at all. Compare, for example, the correspondence accordance of the unstressed end syllables in the following rhyme: *mustad* : *silmad*, black : eyes).

At the level of word boundaries, Räpp avoids splitting rhyme units with word ends almost as strictly as Vaik; in our sample there is only one compound rhyme (***vaikus*** : ***paik, kus***, silence : a place, where).

5.3 Estonian Hip Hop Rhyme

Estonian hip hop culture started to develop in the 1990s and became mainstream in the early 21st century. This is due largely to rapper Genka (Henry Kõrvits, b. 1974) and his lyrics, through both his solo projects and the groups Toe Tag and A-Rühm. The first hip hop album to top the music charts was Toe Tag's collection "Legendaarne", released in 2004. This album had a major influence on the poetics of the lyrics of subsequent Estonian rap artists, among other things due to its innovative approach to rhyming. This is the album we selected for our current study. Figure 7 shows the proportions of different rhyme types on the phonemic level in Genka's verses.

As compared to the other genres in our study—rock lyrics, literary and social media poetry—, hip hop lyrics present a very different picture: the range of types of deviation from exact rhyme is much wider, with several deviations often

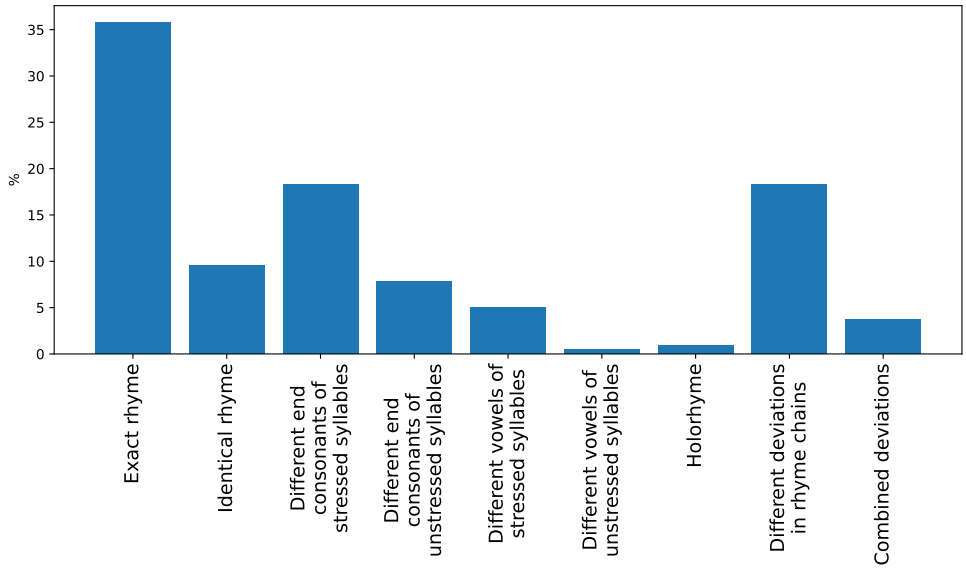

Figure 7: Phonemic level in Genka's rhyme structure

occurring simultaneously in the same rhyme unit. In the sound arrangement of these texts, the functional role of internal rhyme is just as important as that of end rhyme, which is why we included internal rhymes in our analysis.

In Genka's lyrics, the proportion of full rhyme on the phonemic level is only slightly above 35%, and the most common of the deviant rhyme structures is difference in the end consonant of the stressed syllable (*k**umin*** : *t**ulin***, din : I came). The proportion of identical rhymes is even higher than in Räpp's poetry, taking up nearly 10% of Genka's rhymes. There are quite a few instances of admittance of different end consonants of unstressed syllables (***usun*** : *r**usud***, I believe : the ruins), and, somewhat less frequently, different stressed vowels in the rhyme structure occur (***sondides*** : ***sundides***, in the probes : forcing). As regards the incidence of different deviations in the same rhyming pair, here a distinction has to be made between the two separate cases: deviations that occur simultaneously in the same rhyme pair (for instance, ***tüüne*** : ***füürer***, placid : Führer, where there is a deviation of end consonant in both the unstressed and the stressed syllables), and deviations occurring in different rhyme components in a longer rhymed chain. Compare, for example, the following example, where we see both identical and full rhymes, as well as the deviation of end consonants in the stressed syllables:

Tüdruk pliis, las ma vaatan sind **veidi**
sind ei puutu vaid vaatan sind **veidi**
silmadega hoolikalt triigin su k**leidi**
küll endaga hakkama hiljem saan, b**eibi**

Girl please, let me look at you a little bit
I won't touch you but I'll look at you a little

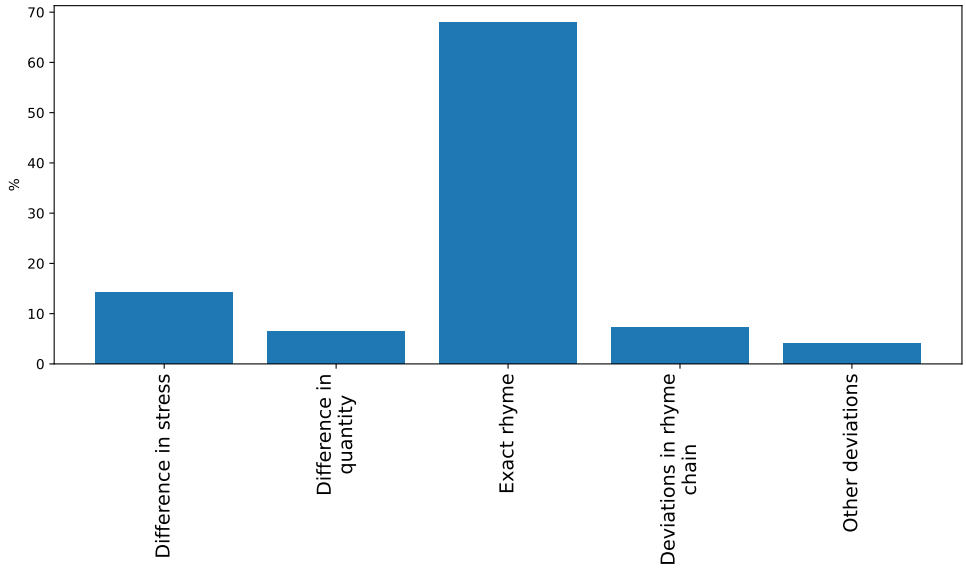

Figure 8: Prosodic level in Genka's rhyme structure

With my eyes I will carefully iron your dress
I can handle myself later, baby

The latter type of deviation is fairly common in Genka, comprising almost 20% of his rhyme units. Orphan rhymes make up about 11% of the sample selected from Genka's lyrics.

Figure 8 shows the prosodic structure of Genka's rhymes.

Although once again the prevailing type is prosodically exact rhyme, in Genka's lyrics these are less prevalent than in Mait Vaik's and Lauri Räpp's poems, making up less than 70% of his rhyme units. He allows deviations in stress (*t**orm*** : *kloro**form***, storm : chloroform) and in quantity (*melood**ia*** : ***viia***, melody : carry). There are also discrepancies in the prosody of the components of longer rhyme chains; several deviations can occur at the same time in a rhyme pair (*jalgr**atta*** : *kolg**ata***, bicycle : Golgotha).

Figure 9 shows the data of stress patterns in Genka's rhymes.

In contrast to the authors studied above, in Genka's lyrics, the proportion of rhymes with primary stresses is lower, comprising only about 60% of the rhyme units. More than 20% of the rhyme pairs consist of components of which one carries a primary and the other a secondary stress (*kõlar**ite*** : ***vitte***, speakers : cunts); in more than 15% of rhymes both rhyme partners carry only secondary stresses. Occasionally, one or both of the rhyme partners lacks any stress signal at all (*val**esti*** : ***hästi***, wrongly : well).

On the level of word boundaries, Genka's poetry showed considerable diversity, distinguishing it from the works of the authors previously analysed in our study.

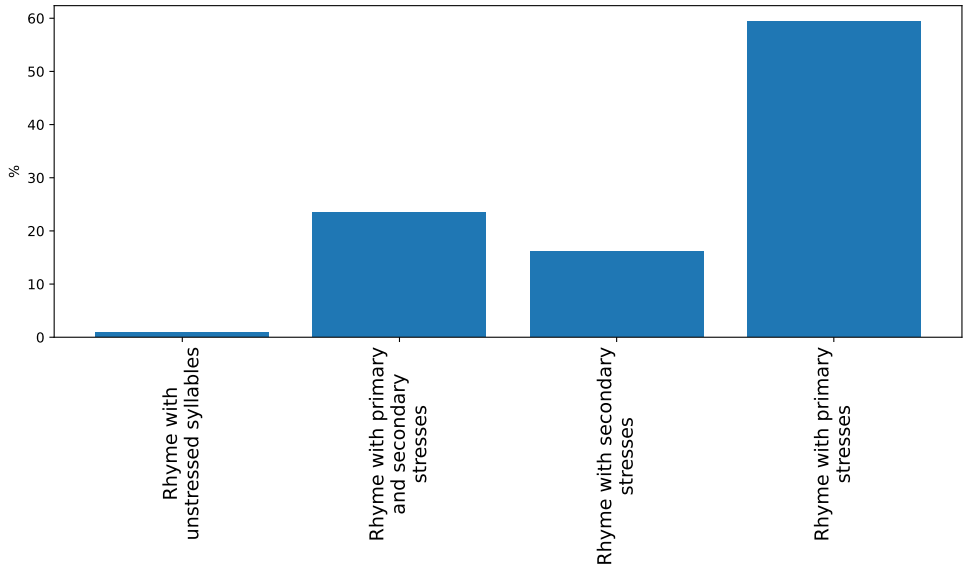

Figure 9: Stress patterns in Genka's rhyme structure

Although Genka strongly prefers to rhyme unbroken units, about 7% of his rhymes are compound rhymes (*pl**iiatsid*** : *l**iialt siin***, pencils : too much here). There is also one instance of semi-rhyme in his sample (*t**ants*** : *p**antzer***, dance : armour).

Among the next generation of artists, Metsakutsu (Rainer Olbri, b. 1987) stands out. In his early years Metsakutsu collaborated with Genka and then continued with his own solo career. In 2010, he released his debut album "Testament" on Genka's label Legendaarne Records, followed by "Kelmiküla Unistus" (2013) and "Kuhu Koer On Maetud" (2016).

Figure 10 shows the data of the phonemic correspondences in Metsakutsu's rhymes.

Compared to Genka's poetry, the proportion of phonemically exact rhymes in Metsakutsu's lyrics is clearly lower, comprising even less than 10% of the rhyme units. The preferred near rhyme type in Metsakutsu's sample is with different end consonants of stressed syllables, which he uses more frequently than the rest of the authors in our study, using these in more than 25% of his rhyme units (*s**amme*** : *k**ange***, steps : stiff). Quite often, in nearly 15% of cases, he allows deviations in the end consonants of unstressed syllables (*v**edand*** : *s**eda***, has carried : this). Deviations in vowels are rarer, and identical rhymes also occur less frequently than in Genka's lyrics. Sometimes several deviations in both rhyme chains and rhyme pairs occur at the same time, both types taking up slightly more than 15% of the sampled rhyme units. The proportion of orphan

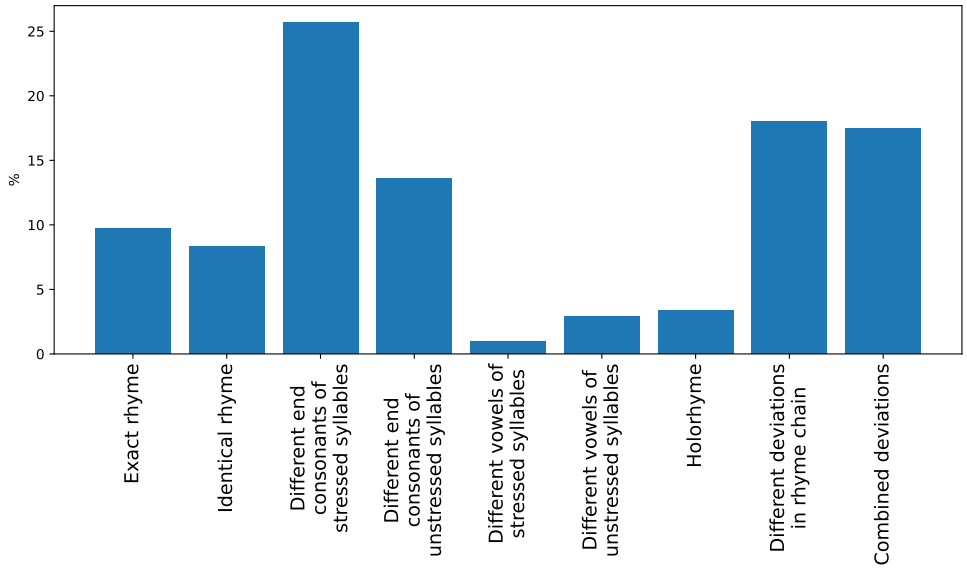

Figure 10: Phonemic level in Metsakutsu's rhyme structure

rhymes in Metsakutsu's lyrics is much lower than that of the other authors studied: unrhymed verses account for only about 5% of his sample.[6]

In Figure 11, data on the prosodic structure of Metsakutsu's rhymes are presented.

When we compare the data from Metsakutsu's lyrics with those from other samples, it appears that in Metsakutsu's rhymes the proportion of prosodically exact rhymes is lower, comprising only about 60% of the verses. The most common deviations are the ones with differences in stress structures (for example *psühhol**oog*** : ***toob***, psychologist : carries), but there is also a fairly similar incidence of mismatch in quantity (***bändi*** : ***fänniks***, band : fan) and several simultaneous differences in the prosody of components of a longer rhyme chain (***ruttu*** : *Metsak**utsu*** : *salaj**utud***, quickly : Metsakutsu : secret talks) and in a rhyme pair (*maga**mata*** : ***matta***, sleep-deprived : bury).

Figure 12 shows the data of stress patterns in Metsakutsu's rhymes.

Interestingly, when compared to Genka's rhymes, Metsakutsu has a slightly higher proportion of rhymes with both partners carrying the primary stress, reaching 70%. Almost 30% of rhymes combine the components with primary and secondary stress, while the proportion of rhyme structures carrying only

[6] There are interesting cases where we see orphan rhymes on the phonemic level, but the verses are still united with the semantic rhyme. Consider the following lines: Ei taha näha, et inime on inimesele **hunt** / Kus kasu saab, on kohal iga kuradi **krants**. I don't want to see that a man is a wolf to another man / where there is profit, every bloody mutt is present. In these verses, the words "hunt" wolf, and "krants" mutt/dog at the end of the verses rhyme with each other semantically and also refer to the artist's own name, which contains the semantics of both ('metsakutsu' means the dog of the woods).

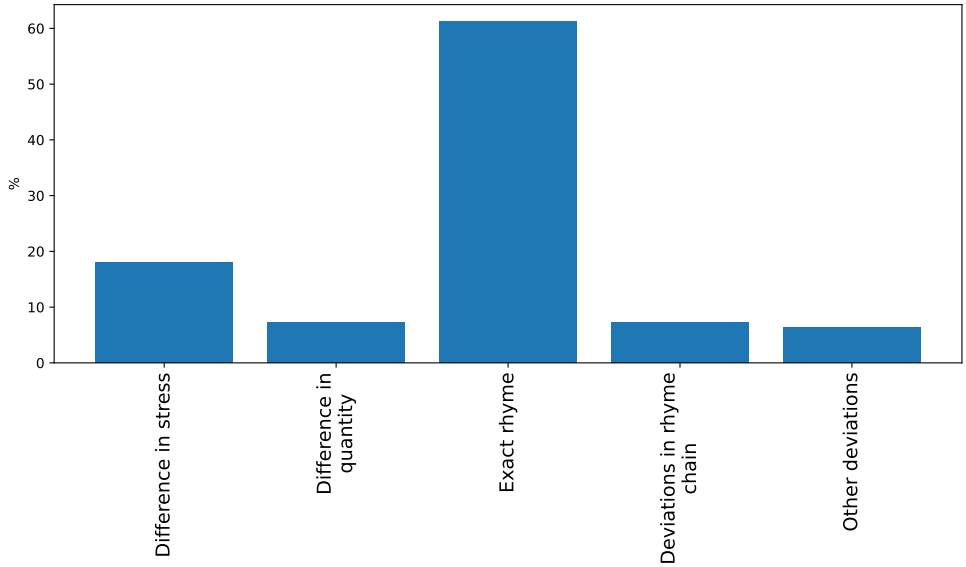

Figure 11: Prosodic level in Metsakutsu's rhyme structure

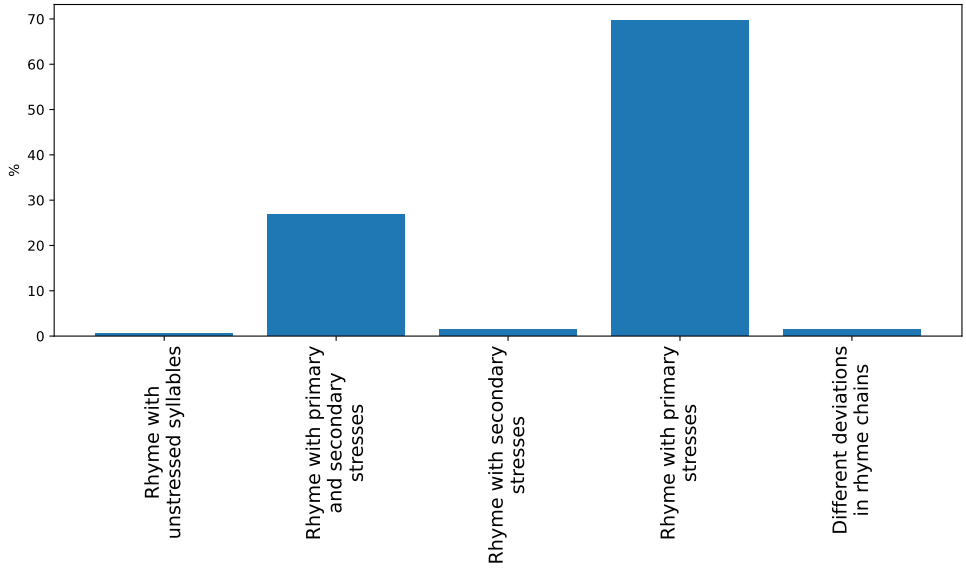

Figure 12: Stress patterns in Metsakutsu's rhyme structure

the secondary stress is significantly lower than in Genka's rhymes. In a few cases, both rhyme partners might lack any stress signal altogether.

With regard to the word boundary patterns, Metsakutsu has even higher proportion of compound rhymes than Genka: the incidence of such rhymes in his sample is about 15% (***mine na*** : ***minema***, go like this : go). On one occasion we observed a semi-rhyme (***leid*** : ***leid****ma*, finding : find), and as one of the more interesting cases we came across a rhyming device that can be considered a type of hidden or euphemistic rhyme. Consider the following verses:

> Jeesus, mine **v**,
> kui sul on bensiini, siis minul on t**ikku**, ei? okei,
>
> Jesus, f off,
> if you have gasoline, I have a match, no? okey

The "v" at the end of the first line, expressly pronounced "ve" by Metsakutsu, is an abbreviation of an obscene word for female genitalia ("vittu", cunt) that rhymes with the word "tikku", match. This accordance is not instrumented in sounds, but is nevertheless semantically present in these verses.

6 Discussion

To interpret the obtained results in the broader context of Estonian rhyming culture, we will include in this part of the study the data we have received from the analysis of Estonian literary poetry. We have sampled texts from Estonian poets of different literary periods and analysed their rhymes using the same method as for popular poetry.

First, let us consider the phonemic level and compare the proportion of exact rhymes in authors from different periods and different genres.

In Figure 13 we can see the distribution of phonemically exact rhymes[7] from a representative of the early Estonian poetic tradition Friedrich Reinhold Kreutzwald (1803-1882) to contemporary Instagram poet Lauri Räpp. The other literary poets are Anna Haava (1864-1957), one of the most brilliant representatives of the late 19th and early 20th centuries; Ain Kaalep (1926-2020), a representative of the purist school of rhyme theory, from whose poetry we have samples from the 1950s and early 1960s; and Artur Alliksaar (1923-1966), who takes a more flexible approach to poetic canons and represents the alternative culture of the same era.

The results show rather clear-cut tendencies in the studied material: in Kreutzwald's poetry phonemically exact rhymes account for just over 70%, a little later in Haava's creation such rhymes have already reached 90%, while in Kaalep's poems they reach almost maximum precision on the phonemic level. In Alliksaar's poems, on the other hand, these standards begin to crumble, although they still prevail in his poetry.[8]

[7] The data include identical rhymes, which Jaak Põldmäe (1978, p. 260) regarded as a subtype of exact rhyme.

[8] Ever since Modernism, the dissolving of rhyme norms is rather universal in European poetic cultures. Russian verse researcher Mikhail Gasparov notes that "the weakening of rhyme was a

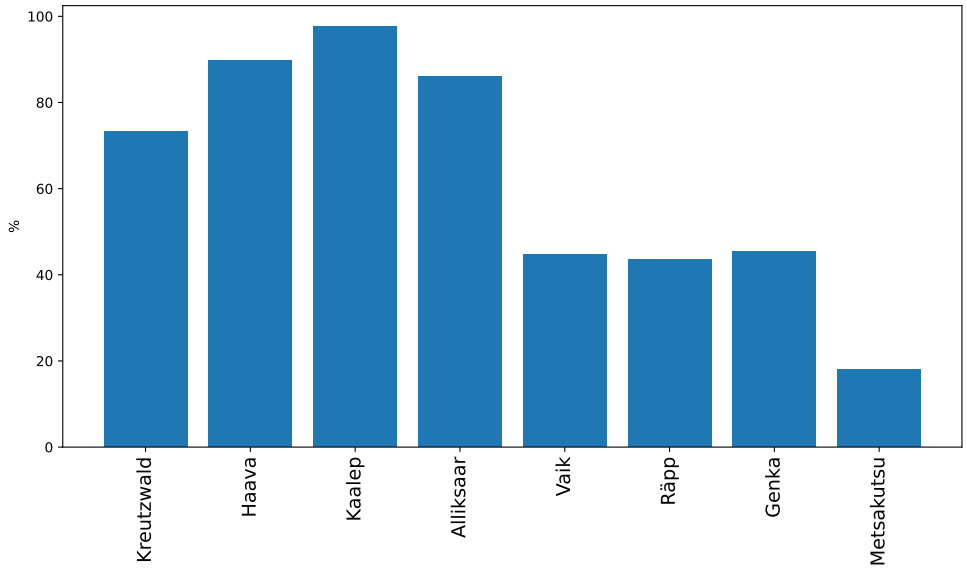

Figure 13: The proportions of phonemically exact rhymes in different Estonian poets

The data regarding the popular poetry of the last decades of the 20th century and the first decades of the 21st century indicate a clear change in rhyming practices. In Mait Vaik's, Genka's and Lauri Räpp's poetry, the phonemically exact rhymes make up less than half of the rhyming units, around 44-46% in all of these authors, despite them being representatives of different decades and different subcultures of poetry. When compared to Haava's, Kaalep's and Alliksaar's poems, the incidence of exact rhymes has thus dropped almost a half. Metsakutsu stands out from the others, with the percentage of exact rhymes being even less than 20%.

If we study the phonemic level in the rhyming strategies of different authors in more detail, we see that in Kreutzwald's poetry the next largest group is made up of rhymes with different vowels in stressed syllables (***ära*** : *t**era***, *m**eid*** : *rändaj**aid***) [away : grain, us : travellers] which occur in as many as 17%, while assonance rhymes with differences in the consonants of the rhyming partners (*r**ipul*** : *widew**ikul***) [hanging : twilight] are found in only six instances in his

reaction to the cult of exact rhyme that had dominated European literature since the Renaissance." According to him, "[a] renewal of rhyme became an obligatory point in the literary manifestos of French Symbolism and Post-Symbolism". Gasparov points out that while in English poetry, probably due to the abundance of vowels and diphthongs, imprecise rhyme moved more towards dissonance (or consonant) rhyme, in Russian poetry dissonance rhymes remained scarce, whereas assonance rhymes became frequent (Gasparov 2002, pp. 278–279). However, because of the official literary policy of the Soviet Union where socialist realism became the ruling theory of writing literature, these processes did not proceed in the same way in Estonia as in free Europe, where liberation from strict rules proceeded more linearly. Socialist realism stipulated not only transparent content but also rules of form, bringing back after the Second World War the dominance of exact rhyme and regular verse meter, while in Western Europe there was a movement from exact rhymes to free verse after the Modernism of the 20th century.

sample. Leaving aside Haava, Alliksaar, and Kaalep, in whose poetry the exact rhymes have high prevalence, we will discuss more thoroughly the samples gathered from popular poetry, where they account for less than half, and see at the expense of which rhyme types this decline results from. Our data revealed that rhymes with differences in consonants play an important role in Genka's and Metsakutsu's texts, being found in more than a quarter of Genka's rhymes and in as much as 40% of Metsakutsu's rhymes.[9] However, the proportion of rhymes with differences in vowels (*tõestama* : *äestama*) [prove : harrow] is considerably lower in their poetry than in Kreutzwald's texts, at less than 10%. It should be noted, however, that rhymes of this type are almost absent in the samples of Kaalep and Alliksaar.

As for other deviations, about half of them are rhymes in which there are deviations both in the end consonants of stressed and unstressed syllables. In a few cases there are deviations both in the vowel and in the consonant part of the syllable, and the remaining cases concern chains with several different rhyme types (almost always an exact rhyme together with the one with a deviation in the consonants).

In the sample from Instagram poet Lauri Räpp, the picture is less varied. Assonance rhymes are found in more than a third of his verses, mainly with different end consonants of stressed syllables, with the proportion of consonant rhymes, as in Genka's sample, being just under 10%. As for the other near rhymes we found in his poetry, more than half of these are rhymes with several differences in consonants at the same time. Almost all the rest have simultaneous differences of consonants and vowels; there is just one case with two different deviations in vowels at the same time.

Thus, the most exact rhymes on the phonemic level in our material are those of the literary authors, occurring in increasing order in the samples of Kreutzwald, Haava, Alliksaar and Kaalep. However, the picture changes when we look at which parts of words and feet were rhymed by these authors.

On the prosodic level, an exact rhyme is the one in which both stresses and quantities coincide. Figure 14 gives an overview of the proportions of prosodically exact rhymes by author.

It can be claimed that in all our studied samples, both the accentual and quantitative coincidence in rhyme units is one of the most reliable criteria for rhyming. It is the only parameter in which the proportion of exact rhymes is more than 50% in all the samples. Somewhat surprisingly, Kaalep and Alliksaar have the lowest indices here, being lower than both the popular lyrics and 19th century poetry. It should be noted, however, that in their case the main reason for these deviations is the fairly frequent use of compound words, resulting from the distinction in our study between primary and secondary stress. Thus, when a simple word is rhymed with a compound word, it eventuates in the difference in stress. The prosodically exact rhymes by Kreutzwald and Haava are rhymes carrying a secondary stress in almost half or slightly more than half of the cases. However, the biggest share of prosodically exact rhymes is

[9] Compare with Finnish freestyle, which is characterised by systematic vowel rhyme, where in the phonetic section constituting the rhyme, all vowels are of the same quality and appear in the same order, although consonants can vary (Sykäri 2017, p. 140).

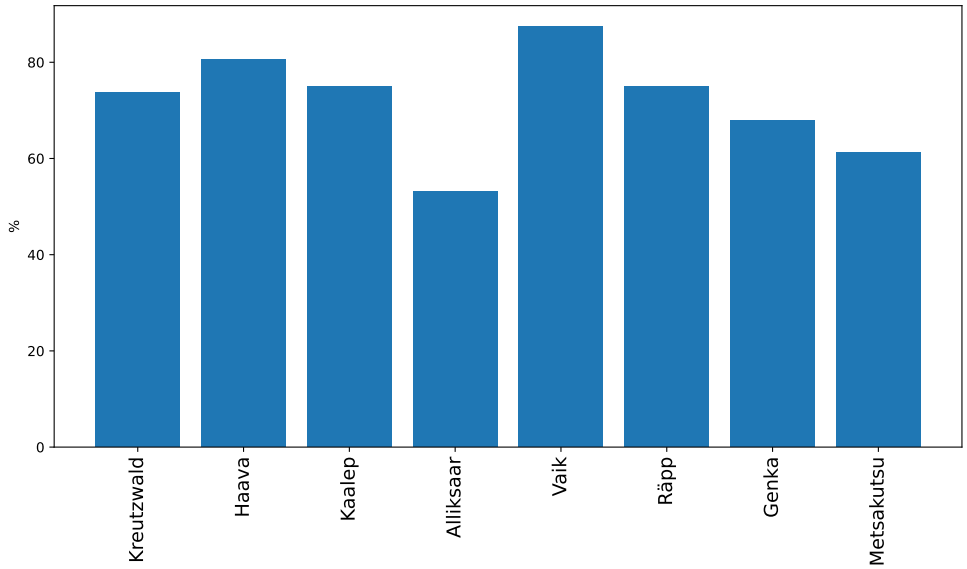

Figure 14: The incidence of prosodically exact rhymes in different Estonian poets

found in Mait Vaik's poetry, where the largest number of rhymes with both partners carrying primary stresses also occurred: both these and prosodically exact rhymes account for about 90% in his sample.

As for the differences in the quantity of rhyming partners, special mention should be made of rhymes of different quantities, which are found in nearly 5% of Kreutzwald's sample (*wahut**es*** : ***mees***, foaming : man). Their proportion is only 2% in Haava's sample and they are practically non-existent in the texts of Kaalep and Vaik. In contrast, the 21st century authors Genka and, especially, Lauri Räpp have used this type of rhyme quite extensively, with proportions of 7% for Genka and Metsakutsu and 8% for Lauri Räpp. It is important to note that in orally performed rap lyrics, rhymes with different quantities are often prolonged in pronunciation in order to be quantitatively equal, a striking example being *s**aagi*** : *vaj**aagi*** (can : need) from one of Genka's songs.

Figure 15 indicates the proportions of rhymes carrying primary stresses in the studied authors.

In Kreutzwald's sample, the proportion of rhymes with only primary stresses is only 38%, while in Haava's poetry, the share of such rhymes is considerably higher, reaching 56%, and in Kaalep's verses even more so, reaching 75%. The highest proportion of rhymes with primary stresses is found in Mait Vaik's verses, where they reach almost 90%; that is, there is a strong preference to rhyme words rather than inflectional parts of words, as is characteristic of Kreutzwald's poetry.

In this aspect, it is interesting to compare the rhyming patterns of 19th century author Kreutzwald, and 21st century popular author Lauri Räpp. While the rhymes of the other authors studied are divided into rhymes carrying

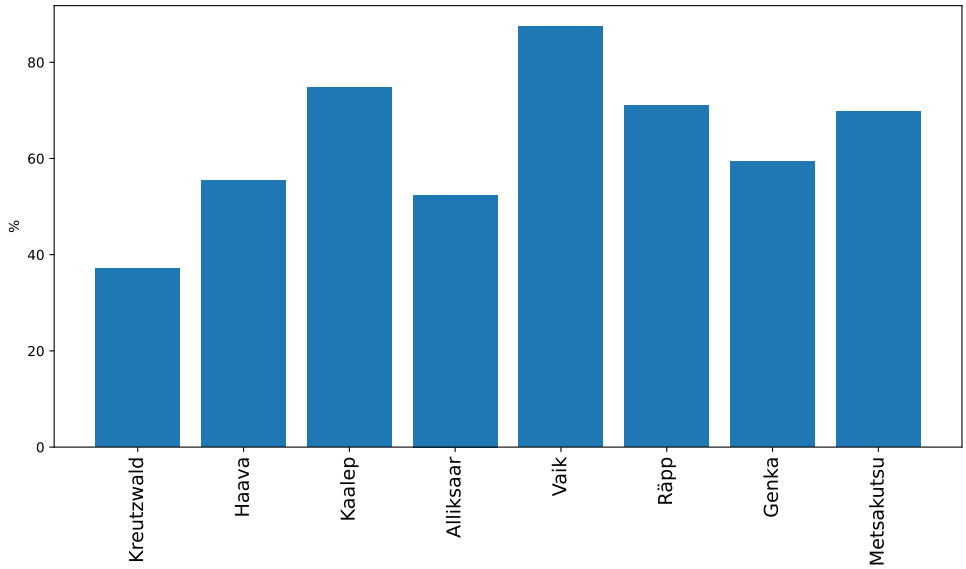

Figure 15: The proportions of rhymes carrying primary stresses in different Estonian poets

primary stresses (***algus*** : ***valgus***, beginning : light), rhymes with secondary stresses (*õitsed**es*** : *kallat**es***, blooming : pouring) and rhymes combining primary and secondary stresses (***eks*** : *algus**eks***, indeed : for a start), Lauri Räpp revives a rhyme type that was still used by Kreutzwald but is no longer found in Haava's rhymes, i.e. rhymes where no stress occurs in the rhyme structure at all. Our analysis revealed that in Kreutzwald's rhymes, one percent of the rhymes belong to the type where the unstressed non-initial syllables are rhymed with syllables carrying a secondary stress (*teretad**es*** : *kahvat**es***, saying hello : turning pale). In more than 8% of his verses, he rhymes unstressed non-initial syllables with each other (*põrm**u*** : *lind**u***, *warj**ud*** : *surn**ud***, *lahk**elt*** : *kiir**elt***, dust : bird, shadows : dead, kindly : quickly) and in Lauri Räpp's sample the proportion of such rhymes is a little over 4%. There are also quite equal proportions of rhymes with primary and secondary stresses in both samples, but there is a divergence in the use of rhymes carrying the main stresses: in Kreutzwald's sample, the incidence is similar to that of the rhymes carrying the secondary stresses, while Räpp clearly prefers rhymes carrying the main stresses.

We conclude the discussion with a few remarks about the last level, the structure of word boundaries. In the studied material, word boundaries turn out to be unexpectedly strong markers of rhyme boundaries. For example, there are no compound rhymes at all in Kreutzwald's and Haava's samples, and there are just a few of them in the samples from other literary authors. The only authors in our study whose rhyming devices definitely include compound rhyme are rap poets Genka and Metsakutsu, while the other representatives of

the popular genres, Mait Vaik and Lauri Räpp, do not use compound rhymes. Thus, a rhyme unit is generally also a lexical unit or part of a lexical unit.

7 Conclusion

While in the last decades of the 20th century regular rhymes started to disappear gradually from literary poetry, in popular poetry the tradition of rhyme continued. This played an important part in the lyrics of the rock bands of the late 1980s and 1990s, which were written in regular rhymed meters. These lyrics soon became mainstream in the popular culture of the time. However, the peak of rhymed pop lyrics came with rap artists, who, influenced by Western hip hop culture, began to create lyrics in which rhyme—not only end rhyme as well as internal rhyme—was the main device of sound arrangement. In addition, we see the emergence of rhyme culture in written pop genres, especially in Instagram poetry. As our analysis has revealed, the resurgence of rhyme in social media and pop music has led to the expansion of its scope. Clear departures from the standards of literary rhyme can already be seen in the lyrics of rock poet Mait Vaik from the 1990s and 2000s. Although in some respects his rhyming principles are even stricter than those of the literary poets of the 20th century; specifically, he overwhelmingly prefers rhymes carrying primary stresses. Starting from his poetry the main feature of rhyme in popular lyrics starts to take shape: the proportion of phonemically full rhymes decreases sharply, accounting for only a third of the total, while assonance rhymes, that is, rhymes in which consonants differ and vowels coincide, become predominant. In addition, Vaik's lyrics contain a small amount of dissonance rhyme, where consonants coincide and vowels differ. A similar picture can be found in the rhymes of Instagram poet Lauri Räpp, where full rhymes and assonance rhymes are strongly preferred. Thus, both authors expand the repertoire of rhyme words by allowing for differences primarily on the phonemic level, mainly in the consonants of rhyme words. While in the literary poetry of this study phonemically full rhyme is with a few minor deviations strongly prevalent, in Lauri Räpp's and Mait Vaik's lyrics there are two main types, full and assonance rhyme, with occasional incidence of dissonance rhyme.

In hip hop lyrics, however, we see an even more varied picture: a style with not just rhyme as the main device of sound arrangement, but the mastery of a particular rapper lies in the uniqueness and originality of his or her rhymes. Thus, in rap lyrics, different new types of near rhyme are introduced to create surprising rhyme effects. While the rhymes of Genka, a first-generation Estonian rapper, contained about a third phonemically exact rhymes, a proportion comparable to that by Mait Vaik and Lauri Räpp, the rest of his rhymes are much more diverse, belonging to different subtypes of near rhyme. Both Räpp and Vaik extended the variety of rhyme usage mainly by using assonance rhymes, the difference being mainly in the stress consonants, whereas in Genka's case the differences in the sounds of rhyme partners are more evenly distributed; that is, there are no longer two main rhyme types but a much more varied picture. We also see combined deviations in about a fifth of the verses; that

is, there are several different phonemic deviations in a chain. The same tendency is reinforced even more strikingly by the next-generation hip hop artist Metsakutsu, in whose lyrics phonemically exact rhyme occurs in less than a tenth of the verses.

It is also interesting to note that, on a prosodic level, contemporary popular literature revives rhyming devices that were in use in the 19th century, but which have since become a literary taboo. Rhyme with unstressed syllables as found in Kreutzwald's poems were completely absent from the works of subsequent poets until they sporadically started to occur in Genka's texts, and then to an even more considerable extent in Lauri Räpp's poetry. We can thus see how the popular poetry of the last few decades in both hip hop lyrics and Instagram texts has adopted a number of strategies that were also present in 19th-century poetry, which can be seen as either impure rhymes or, on the contrary, as a richness of rhyme that helps avoid monotony, depending on one's taste.

By comparing the four levels analysed for the different periods—prosodic, phonemic, stress and word boundary patterns—we can see that the first of these has been the most stable over the different periods. While the proportion of phonemically exact rhymes varies from Kreutzwald to modern popular lyrics from 18% (Metsakutsu) to 98% for all the authors studied, the proportion of prosodically exact rhymes is over 50% for all of them, with the proportion of prosodically exact rhymes exceeding 60% even in the poetry of authors who take great liberties on the phonemic level, such as Genka and Metsakutsu. The second constant, however, has its origins after Kreutzwald, who is the only author in whose work pure main rhymes do not predominate. That is, one or both rhyme units are usually non-initial syllables carrying the secondary stress or no stress at all, whereas in the work of all subsequent authors, rhymes carrying the primary stress account for more than half of the rhyme units in the sample. In the work of Metsakutsu, in whose lyrics the proportion of phonemically inexact rhymes is the highest, they account for as much as 70%. There is thus a clear tendency on the one hand to extend the possibilities of rhyming and, on the other, to form sound repetitions primarily between lexical units rather than smaller sound compositions.

Acknowledgments

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Intermedial Adaptation Strategies when Setting Poems to Music

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Abstract

There are several ways to adapt a poem to a new medium and create a song based on it, such as a simple reference, narrative continuation of the poem, parody or other reflection on its content or form. One of the most common methods is, undoubtedly, setting poetic texts to music with minimal intervention, such as transferring verses, repeating them, or even eliminating them. It is commonly thought that this kind of musical adaptation preserves the poem and gives it a new life in another medium, but studies of which textual mechanisms come into play and why are scarce.

This work presents an analysis through textual collation of 65 poem–song pairs, to analyse the types of modification that occur most frequently and, within them, to examine critically which are the criteria that determine the choice to add, delete, or repeat verses or other sequences. To this end, we worked with the corpus provided by the PoeMAS project, which collects, in a comprehensive, publicly available database, a wide variety of Spanish lyrics (from 1975 onward) based on poems. Using this corpus, a pairwise collation of the poems and their song adaptations was carried out in order to examine the textual differences between a poem and each of its adaptations. We have drawn from the theories of intersemiotic translation (Jakobson 1959; Romano 1994, 1999) and intermediality (Rajewsky 2005; Wolf 1999) to propose a formal classification for the types of change that occur most frequently and analyse them in our digital corpus. The pairwise collation of song–poem texts and the classification of changes using this taxonomy allowed us to reach conclusions about text modifications and about the criteria underlying them in lyrics, explaining therefore why and when some lines or sequences are repeated, suppressed, added or changed.

1 Introduction

Studies on the adaptation of poetic texts into commercial songs are abundant and very diverse in their theoretical and methodological approaches (Martínez

Cantón 2022). There are many different ways in which a poem can be present in a song, since it is, essentially, a relation between two artistic objects, something that has been widely investigated and typified by studies of intermediality and adaptation. Some of the most common ways of relating poem and song are to include quotes from the poetic text in the lyrics of a song, to parody it, to continue its story or to recreate its text musically. Perhaps the most common one is to set the text to music, trying to preserve it as respectfully as possible, without introducing major changes. The usual term to describe these cases is musical adaptation (Albrecht 2010; Hopkins and O'Leary 2005; Ingham 2013) or musical setting (Da Silva 2004; Ingham 2013), although the latter term is more restrictive, and usually refers to using the text of the poem as the song text with only minimal intervention, such as transferring the text, repeating verses or words, or even eliminating some of them.

This second type of musical adaptation, musical setting, has attracted less attention from researchers, since from a purely textual point of view it is typically accepted that they entail less originality than other types of musical adaptations. However, setting a text to music, musicalising it, is a common tool within some musical genres, such as singer-songwriting traditions, and is also used in other genres. As confirmed by browsing and analysing the PoeMAS project database,[1] which collects songs that adapt previously existing poems in different ways, the musical setting adaptation strategy is the most common way of setting a poetic text to music.[2]

Given that studies on the textual mechanisms that come into play when setting a poem to music and their rationale are scarce, we propose to make a systematic comparison of the changes between the text of poems and the songs that set them to music, supported by Digital Humanities techniques such as automatic collation and annotation. We will try to classify different procedures that are carried out with the text of the poem to convert it to song lyrics.

We will try to answer questions such as which are the most frequent changes at the textual level when setting a poem to music. Likewise, we will verify whether it is more common for the changes to have a more structural, semantic or phonic dimension, and we will see whether these changes are determined by needs of the song medium.

These questions will be answered by means of critical collation analysis, in which we will systematically compare the poetic text with its musical adaptation. In this manner, we intend to better understand the changes that occur at the textual level in musical settings.

[1] Accessible from: https://poemas.uned.es/

[2] Throughout this study, we will be working with the so-called musical settings. However, it is important to note that this term will be used interchangeably with "musical adaptations", in order to maintain linguistic fluidity in the text and reflect the diversity of approaches present in the field of study.

Type of change	Affected element	Linguistic level	Relevance
Transposition	Word	Phonic	Major
Repetition	Verse	Structural	Minor
Omission	Fragment	Semantic	
Addition			
Substitution			

Table 1: Criteria used to categorise each textual alteration between a musical adaptation and its source poem

2 The Codification of Variants in Musical Adaptations of Poems

In order to compare them systematically we need to first create a typology of variations that we find in a musical setting with respect to the original poetic text. That is, we need to categorise these changes, which is not an easy task. This section will present our categorisation scheme after discussing the related literature.

An adaptation of the poem to music can be taken as an intermedial product. Rocío Badía, following the intermediality classification by Gil González and Pardo García (2018), classifies the musical setting of a poem as an example of extrinsic intermediality, since it is the "effective presence of a previous poem in a song" (Badía Fumaz 2022, p. 339). She also classifies this kind of setting to music, very respectful to the original poem, as a type of imitative transmediality, that is, the transfer of a work to a different artistic medium in such a way that it attempts to imitate, using the new medium, the original object (in this case the poem). This researcher points out that musical settings are usually based on poetic texts and rarely ever on other genres, although exceptions exist, and that there are few changes to the text in the lyrics, the minimum needed to achieve a successful song, such as the creation of refrains, repetitions of words, modernisation of words, among others (Badía Fumaz 2022, p. 349).

In order to describe how text is reorganised in these intermedial products, it is then necessary to be able to categorise the possible changes between poem text and song text. We developed a categorisation scheme (Table 1) and applied it to our corpus (Section 4). Let us first present the theoretical framework upon which our categorisation is based.

Rossana Dalmonte proposed applying André Martinet's concept of expansion (Martinet 1980, p. 128) to address in what different ways music can expand the meaning of a poetic text (Dalmonte 2002). She referred to expansion as the possibility of adding elements to a work, in this case a poetic text, without changing the relationships and functions of its previous elements. She distinguished three fundamental types of expansion: phonological, grammatical and semantic. Although her proposal referred to how music expanded the original text, we will use these divisions, well established for classifying linguistic phenomena, for our classification of textual variants that we will see below.

According to Marcela Romano, who draws on Jakobson's theories of intersemiotic translation (Jakobson 1959), a poem is transcoded for entering into a

more complex sign system. In this system we find, on a virtual level of existence, the original verbal text, be it in its initial form, or, most frequently, transformed and reoriented. In this way, as Romano further explains, the initial text can be abbreviated, its verses turned into a refrain, its stanzas relocated, or combined with others by other poets or by the singer-songwriters themselves. The verbal text thus coexists with a musical text, created by the composer, adapted to the musical-rhythmic patterns of the verbal one (Romano 1994, p. 61).

Based on these studies and the textual comparison of poems and lyrics, we have created a classification scheme (Table 1) that includes different criteria for the analysis of textual variation in songs set to music.

The "type of change" column includes all types proposed by Romano except the combination of lines from the original poem with lines by a different author. In our analyses, we have considered this type of change to belong to the "addition" category when contents are added to the original poem, or to the "substitution" category when one element is replaced with another.

We have considered three discourse units at which a change can occur: at the word level, at the verse (i.e. poetry line) level, and at the fragment level. The word change type encompasses alterations involving individual words. Verse changes refer to alterations occurring at the level of a complete verse line in the source poem. Fragment changes address modifications at a broader level, potentially involving one or more sentences, and it is used here as a unit larger than a verse line from the source poem. It can manifest as a cluster of verses containing a single sentence or even several sentences.

We have not considered lower levels, such as morphological changes within the same word, but this may be relevant to future work.

At the linguistic level, we have taken into account the dimensions considered for the expansion operation (see above) by Dalmonte (2002).

We have also classified the changes according to their level of relevance.

It should be noted that for classifying changes according to the above scheme, we have relied on different studies on the structure of pop and rock songs (Watson 2003; Sloan et al. 2020; Rothman 2015; Binder 2017). These studies consider that the most common structural elements in pop and rock are the introduction, verse, chorus, bridge and conclusion, with variations in their organisation and also possible additional elements. Thus, a change is structural if an element happens to develop a function different from the one it had in the poem. The most frequent example is the case where two lines that appeared only once in the poem are repeated several times in the song in order to create a refrain or a chorus.

We are aware that, when studying adaptations, even if we do not find textual changes, we might consider that changes exist in the structural function of a verse or group of verses depending on the music that accompanies it. We want to clarify that what we document in this study are changes in the text that occur when adapting the poem to the structure of the new medium.

It will always be challenging to establish whether a change occurs solely to adapt the structural function of certain elements of the poem or if it is done for stylistic reasons. The most common scenario is that both reasons play a role. Finally, besides the classification scheme in Table 1, our annotation template

Relationship with poem	Number of songs
Similar musicalisation	585
Identical musicalisation	269
Quotation	24
Allusion	16
Intertextuality	7
Continuation	5
Influence	4
Transposition	3
Parody	2

Table 2: Overview of the types of musical adaptation collected in PoeMAS by December 2021

also included a column for comments. There we described some of the functions that the changes carried out have in the song. We have not followed a controlled vocabulary in these comments, since it was not practically possible to restrict the functions played by these changes to a predefined set, although we have tried to be systematic in recording the functions.

3 Corpus and Methods

To our knowledge, this is the first systematic analysis of textual variations that occur in musical adaptations based on a corpus study. The corpus used is the one provided by the PoeMAS project, which collects, in a publicly accessible database, a wide variety of Spanish song lyrics (from 1975 onward) based on poems. Each corpus entry provides valuable metadata (date of publication, performer or author, genre, etc.) and the texts of the poem and the song. In the corpus, the relationship between poem and song is classified according to a set of categories based on Genette (1997), as can be seen in Table 2.[3]

Table 2 reflects the distribution of poem–song relationships in the entire PoeMAS database (of which our corpus is a subset) as of December 2021, with almost a thousand records.

A total of 93.2% of the recordings have identical or similar musicalisations and only a handful constitute other types of approach to adapting the poem to the song. This suggests the relevance of focusing on the musical setting adaptation strategy, as we did in the present study.

Based on the PoeMAS database, we developed a corpus of poems and lyrics compliant with the Text Encoding Initiative guidelines (TEI Consortium 2022). The corpus name is ANVERSO.[4]

Our work draws from the 585-song subcorpus belonging to the "similar musicalisation" category in Table 2; "identical musicalisations" could obviously not be taken into account, since no textual changes are found in them. From

[3] The vocabulary underlying the related database field was modified in 2023, but at the end of 2021, when the corpus study carried out here was developed, the categories were the nine ones mentioned above.

[4] Accessible from: https://github.com/claraimc/ANVERSO

this subcorpus, a further selection was made by choosing the authors with the highest number of adaptations, in order to have a representative sample that allowed us to carry out two types of comparison. First, comparing each poem with each of its adaptations in a pairwise manner. Second, comparing the same poem's adaptations with each other. We have closely examined 65 song–adaptation pairs.

Once the selection was made, we first converted the TEI encoded files into plain text to then carry out the automatic collation. Collation is the practice of comparing texts in order to identify the differences between them. Usually, the common contents in the texts are aligned and the results of the comparison are presented as an alignment table, which allows us to easily see where the texts diverge. One of the disadvantages of the alignment table is its inability to handle the visualisation of transpositions (which are represented as unrelated omissions and additions).

We carried out a pairwise automatic comparison of the poem and its adaptations using the CollateX Python library (Dekker and Middell 2011). Thus, instead of comparing each poem with all its adaptations at the same time, we created an alignment table for each adaptation. Then, we examined each textual divergence, classifying it according to the four dimensions presented above (see Table 1 and process in Figure 1 named "Analysis"): type of change, affected element, linguistic level, relevance. It must be noted that each dimension was annotated with a single value. A dataframe presenting each variation, its annotated type and corresponding metadata was then created to facilitate quantitative analysis (Figure 1).

4 Results

The collation of this representative corpus has given us relevant data to shed light on the textual changes appearing when a poem is set to music, even when minor changes occur, providing valuable insights into the intricate relationship between text and musical adaptation.

Figure 2 shows the most common type of textual variation across adaptations, which turns out to be repetition at the level of words, verses (i.e. poetry lines) or fragments. It occurs in more than 80% of the adaptations. A more striking fact is the high frequency of substitution (i.e., the change of one word, verse, or fragment for another), which occurs in more than 50% of the musical settings studied.

Most of the changes, according to the corpus analysed, have a structural value (Figure 3), that is, they are variations in the text of the original poem that cause the new text to have a different structure. Accordingly, the changed elements have different functions from those they had in the original poem. This type of structural change includes repetitions of fragments or lines that acquire a new value in the song with respect to the rest of the text (refrain function, or conclusive function), when such a value was not present in the poem. Most of the adaptations present this type of change.

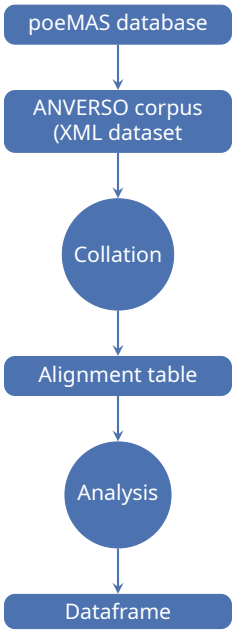

Figure 1: Data flow diagram with the stages we followed to develop the dataframe used in the current study

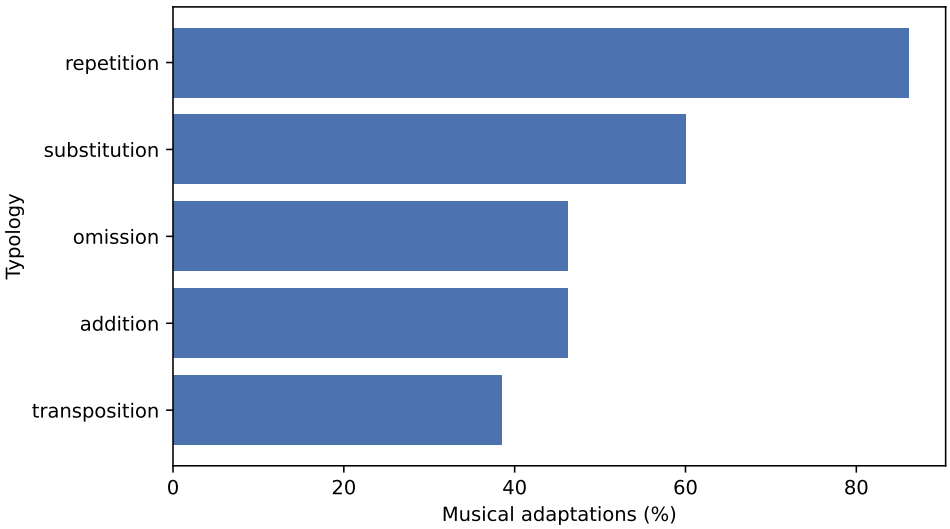

Figure 2: Frequency of textual changes. Proportion of adaptations showing each type of change

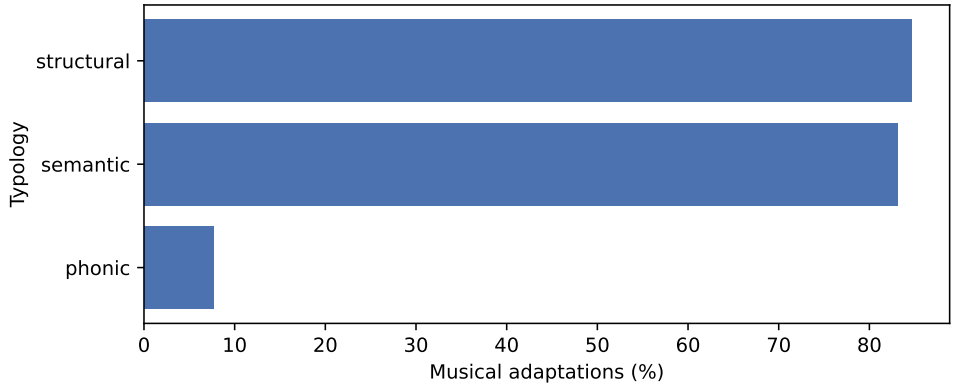

Figure 3: Change by level of analysis. Proportion of adaptations showing each type of change at the linguistic level

As can be seen in Figure 3, changes at the semantic level are almost as frequent as the structural ones. It should be noted that it was not possible to consider the omission of words or fragments of the poem that function as a hypotext as simultaneously structural and semantic, since we only allow one value per dimension (cf. Table 2). We chose to label such cases as semantic changes only. The same happens with the repetition of a word in an insistent manner, which changes the meaning of the base text. Such cases have been labelled either as a structural change or as a semantic change: If the change does not fulfil a very clear structural function within the song (bridge or refrain), it was labelled as a semantic change only.

As we can see in Figure 4, a very high number of adaptations include the modification of fragments, but there are changes at all levels. Nevertheless, it is initially surprising that more adaptations show modifications at the word level than at the line level.

Further investigation of the data reveals new information. Looking at the total number of modifications, instead of counting like in Figure 2–4 the number of adaptations (i.e. of songs) showing each modification type, we observe other trends. Figure 5 shows the percentage of each of the changes (substitution, addition, omission, repetition, or transposition) for each of the element types considered (fragment, line, or word). Thus analysed, although most of the songs studied present some type of repetition, at the fragment level, omission is even more common: It is more common for poem fragments to be omitted than it is for them to be repeated. At the line level, however, repetition is by far the most frequent. At the word level, substitution is the most frequent.

This significant difference between the type of changes that occur at each level is very relevant, because it can be related to different types of procedures when adapting the poem to the new medium. The frequent omission of fragments could be related to the temporal limitation of the new medium. To explore this hypothesis we calculated we examined the frequency of relevant

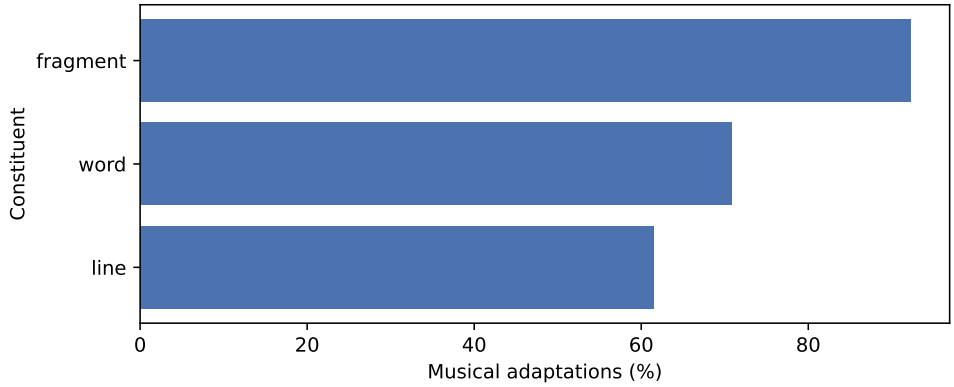

Figure 4: Sequence types modified in musical adaptations. Proportion of adaptations showing changes at the affected level category

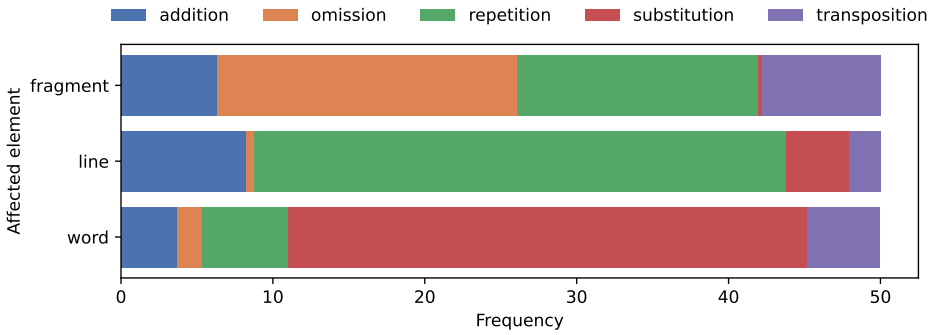

Figure 5: Type of change by affected element. Most frequent type of change per affected element. Percentage of each type of change per affected element

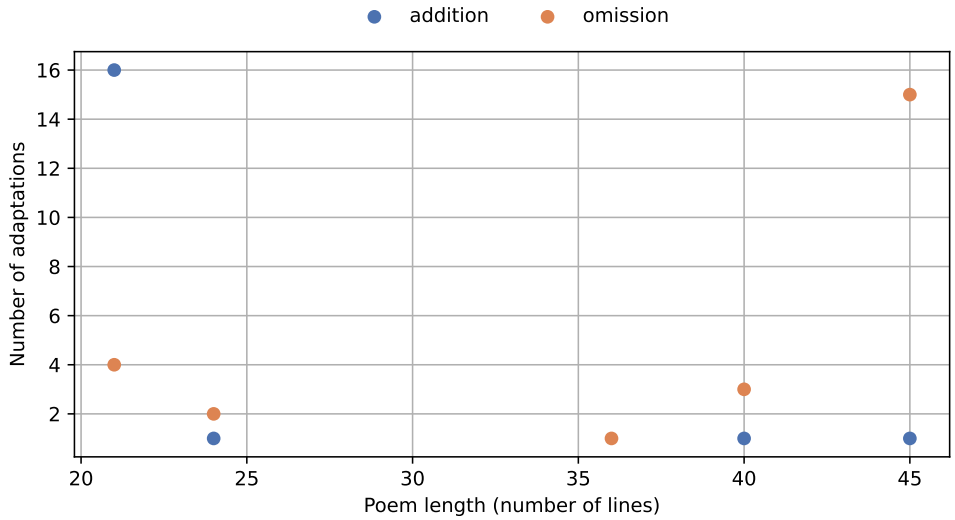

Figure 6: Frequency of relevant additions and omissions by poem length. Adaptations that present major additions and omissions by poem length

additions and omissions in relation to the length of the original poem evaluated by its line number (Figure 6).[5]

As anticipated, shorter poems tend to feature more additions, while longer poems are more prone to omissions. Although we can see that some long poems (with 40 and 45 verses) may present major additions, in all cases the same adaptation had major omissions as well. Pop and rock songs last, in general and quite homogeneously, "between three and five minutes" (Bennett et al. 2005, p. 135), and follow similar structures. The so-called AABA or 32-bar structure (Appen and Frei-Hauenschild 2015) or one of its variations, such as the very typical ABABCB (verse, chorus, verse, chorus, bridge, chorus), is often emphasised (Swindali 2020). When setting a song to music, these structures are typically achieved through repetition and omission of fragments.

If we filter the data to see the type of changes that have structural value (they might also have semantic or phonic value, but to a lesser extent and were thus labelled as structural) we find what we see in Figure 7.

The most frequent changes with structural function are the repetition of fragments and the repetition of whole lines of verse. Transposition is also relevant for all elements. This makes us think of fragments, lines or even isolated words that are repeated and carried from one place to another in the poem precisely to act as refrains. The examples are abundant. Here is one from *Romance del desterrado* by Emilio Prados, set to music by Paco Ibáñez. Repetitions are in italics and omissions are underlined. We have marked substitutions, such as

[5] This chart does not include the adaptations of *"Proverbios y cantares"* by Machado, a very long composition (306 lines).

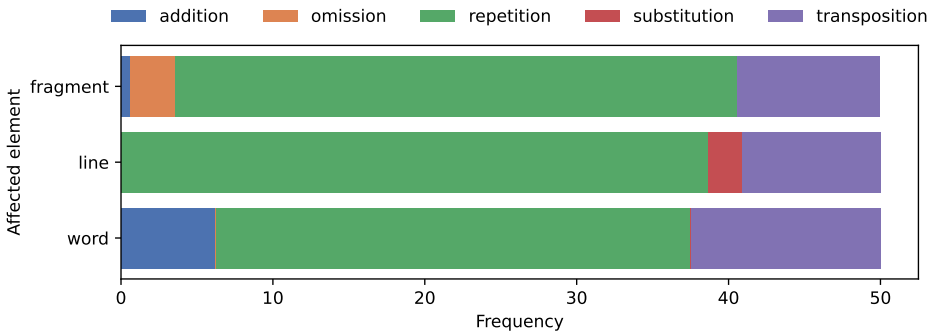

Figure 7: Type of change by affected element with structural value. The most frequent types of change with structural value at the level of affected element

substitutions of a word in the singular for a word in the plural, or vice versa, in bold:

¡Ay, nuevos campos perdidos, campos de mi mala suerte! Ahí se quedan tus olivos y tus naranjos nacientes;	¡Ay, nuevos campos perdidos, campos de mi mala suerte! Allí se quedan tus olivos y tus naranjos nacientes.
brilla el agua en tus acequias, surcan la tierra tus bueyes y yo cruzo tus caminos y jamás volveré a verte.	Brilla el agua en tus acequias, surcan la tierra tus bueyes y yo cruzo tus caminos *y jamás volveré a verte,* *y jamás volveré a verte,* *y jamás volveré a verte.*
Los tiernos brazos del trigo entre tus vientos se mueren. ¡Ay, los brazos de mi sangre son molinos de mi muerte! No tengo casa ni **amigo,** ni tengo un lecho caliente, ni pan que calme **mis hambres,** ni palabra que me aliente.	No tengo casa ni ***amigos,*** ni tengo un lecho caliente, ni pan que calme mi ***hambre,*** ni palabra que me aliente.
¡Ay, cuerpos desheredados! ¿Cómo tu tronco sostienes, si al que corta tus raíces tu fresca sombra le ofreces? Mal cuerpo me ha dado el mundo; mal árbol que ni florece,	*Brilla el agua en tus acequias,* *surcan la tierra tus bueyes* *y yo cruzo tus caminos* *y jamás volveré a verte,* *y jamás volveré a verte,* *y jamás volveré a verte.*

ni puede tener seguro
fruto que en su rama crece.
¡Ay, el valor de mis manos!
¡Ay, los ojos de mi frente!
¡Ay, bajo la luz del alba!
¡Ay, bajo la sombra fuerte!
Ya siempre andarán despiertos,
despiertos sin conocerme,
que sólo miran al viento
por donde sus penas vienen.
¡Ay campo, campo lejano,
donde mi color se muere;
nunca encontrarás mi olvido
si he de olvidar el perderte!

It is important to note that in our categorisation of the changes, as said above, we only annotated one value per criterion. We chose to label major omissions as operating at the semantic level, although they clearly also have a structural dimension. Thus, it would be desirable to review the data in this regard and enable multi-value fields.

Repetitions, omissions and transpositions of contents always entail some degree of semantic change, so we have also described the changes according to their greater or lesser relevance. We considered cases such as those seen in the previous example, in which modifications are made from *"amigo"* to *"amigos"* (from singular to plural) or from *"mis hambres"* to *"mi hambre"* (from plural to singular), to be of low relevance. We consider that stylistic factors are at work, but without a major semantic change.

What changes are made in the setting to music of a poem that entail major semantic changes? At this level, as shown in Figure 8, we mainly find substitutions of some words for others, omissions of whole fragments and repetitions and additions of lines.

Semantic change is the most frequent type of linguistic change (Figure 9). It should be noted that this category was used whenever fragments of considerable length are omitted, or verses are added. The omissions have been marked as semantic changes, because they usually eliminate a key part of the poem. Figure 7 also shows the importance of the addition of lines or fragments, an operation which also clearly has semantic value. However, the passage to the musical medium also weighs on the structure, as we can see in Figure 9, where we can see that there are many structural changes at the fragment level.

At the word level we also find certain changes of great semantic relevance, as the examples in Table 3 illustrate. The sentence *"Y guardan toneladas de asco por cada milímetro de dicha"* can be translated as "And you all harbour tons of disgust for every millimetre of joy".

We find here several examples of changes classified as Type of change = substitution, Affected element = word, Linguistic level = semantic, Relevance = major. In the musicalisation, it seems that the sense of what is said in the poem

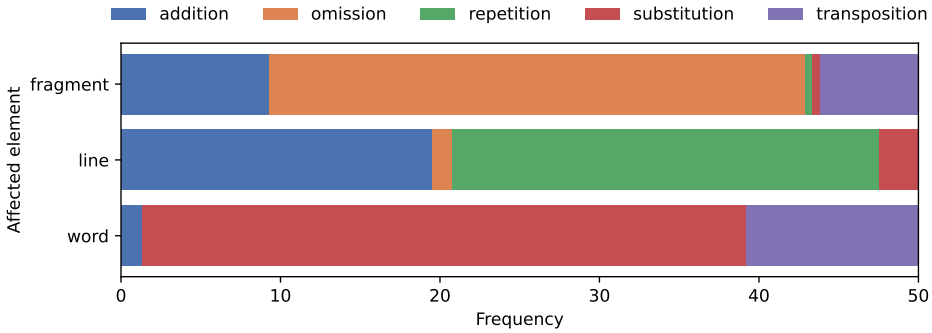

Figure 8: Type of change by affected element with semantic value and major relevance. Changes within the semantic dimension and major relevance

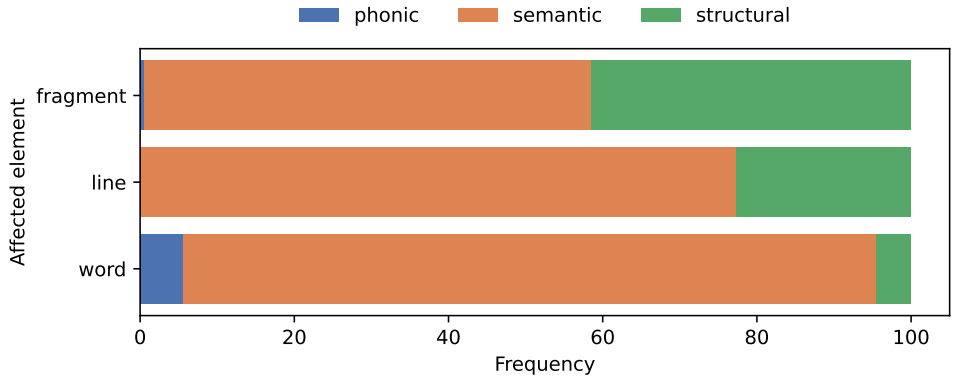

Figure 9: Type of change at the linguistic level. Most frequent type of change at the linguistic level

Todos ustedes parecen felices by Ángel González (1965)	*Todos ustedes parecen humanos* by Disidencia (2008)
y guardan toneladas de ***asco*** [disgust] por cada *mílimetro* de *dicha*	y guardan toneladas de ***hostilidad*** [hostility] por cada *gramo* de *humanidad*

Table 3: Examples of semantic changes with major relevance

[Yo voy soñando caminos] by Antonio Machado (1907)	*Voy soñando caminos* by Carlos Cano (unknown)
"En el corazón tenía la espina de una pasión; logré arrancármela un día; ya no ***siento*** [I can't feel my heart] el corazón". Y todo el campo un momento se queda, mudo y sombrío, meditando.[6]	"En el corazón tenía la espina de una pasión; logré arrancármela un día; ya no ***tengo*** [I lost my heart] el corazón". Y todo el campo un momento se queda, mudo y sombrío, meditando.

Table 4: Example of semantic change that increases the intensity of the meaning

is softened through word substitutions that diminish the intensity of the base text.

Semantic change can also have the opposite function, i.e., increase the intensity of the song text as compared to the poem's (example in Table 4).

5 Conclusion and Future Work

The analysis of the procedures that take place in such a mimetic form as the musical setting of a poem sheds light on some criteria guiding the choices carried out by authors in this artistic practice.

No matter how minimal the intervention in the text, there is always a process of appropriation by the song writer, who becomes in a way the "author" of this new text. The most frequent changes have semantic value, that is, they resemanticise. A clear resemantisation occurs in the change to the new medium, but there are also semantic changes at the textual level itself.

The changes carried out involve a creative process, related to the variation we find in texts derived from the same poem text. As Pelegrín pointed out: "Variation is a process of creation: it involves the appropriation and recreation of oral literary procedures and structures in a daily experience" (our translation)[7] (Pelegrín 1984, p. 13).

In this sense, it is also relevant to investigate the different versions of musical settings that we find for the same poem. We have studied and analysed up to 26 versions of La Saeta by Antonio Machado. In them, there are significant variations with respect to the original poem, but we found very little variation among the musical versions. Many of them begin with the addition "Dijo una voz popular" ("A popular voice said"), which indicates that these adaptations are already made from another musical product, the song by Joan Manuel Serrat that first introduces that addition in 1969, and not from Machado's poem directly. Zumthor said:

[6] A gloss for these verses by Machado is: "In my heart I had / the thorn of a passion. / One day I pulled it out / now I feel no heart. / All the fields suddenly /are still, mute and somber: / meditating" (translated by Barnstone in Machado 2013, p. 24).

[7] In the original source: *"La variación es un proceso de creación: significa apropiación y recreación de procedimientos y estructuras literarias orales en una experiencia cotidiana y vivida"* (Pelegrín 1984, p. 13).

> Songs are, in fact, the least recognised subgroup of "popular poetry". The criteria tend to slip away whenever a definition is attempted. Most frequently it is anonymity that may be construed dynamically. A song becomes "popular" when its source is forgotten. For this, however, we have to distinguish several degrees of "popularity". It has been written that a song is "popular" when the public at a modern festival sings it in chorus, or when, as with protests songs, intense participation bespeaks a deep commitment to its message (Zumthor 1990, p. 15).

The example of La Saeta's adaptations illustrates how the existence of this artistic object, the song, has achieved artistic success. While the memory of the original poem is preserved, it is the song itself that becomes popular and spreads through music. Laín Corona corroborates this, stating,

> Consider "La saeta", a poem by Machado that Joan Manuel Serrat set to music in "Dedicado a Antonio Machado, poeta" (1969). Of this song, 26 versions in Spanish have been accounted for in Spain, but they may not be the only ones. [...] Simply by listening to them, even without musical expertise, it is easy to determine that the 26 versions of "La saeta" derive from Serrat's original melody (Laín Corona 2022, p. 436).

The lyrics of Serrat's version, with all its additions, are passed on to subsequent adaptations, which naturally stem from the song rather than the poem. This demonstrates that in the popular repertoire, at least in the musical domain, the singer-songwriter's version is more prevalent than Machado's poem.

This would also justify an extension of our analysis, in order to establish a classification of textual variants that goes beyond a pairwise comparison and tackles instead a holistic analysis of all adaptations of the same poem.

On the other hand, we should also consider which changes are intrinsically motivated by the new medium and which ones, on the contrary, are motivated by style. In our study we have pointed out that many of the changes at the structural level are produced by the adaptation to the musical medium. This is the case with repetitions of fragments or lines, but also with omissions. Although they undoubtedly have semantic value, in most cases they have the function of shortening the poem to fit the length of the song or of creating bridges and refrains.

Repetition is thus the most frequent type of change. In this sense, Abeillé noted that the pop song "is a formula based on repetition, whose verbal content only becomes important and is remembered by being immediately associated with a melody and a given rhyme scheme" (our translation)[8] (Abeillé 2013, p. 167). Thus, following Abeillé's observation, repetitions can be seen as a change favoured by new medium.

Most of our planned future work entails an enhancement of the manual change annotation. Some limitations of our first analysis have already been pointed out in this contribution, such as the impossibility of assigning more than one category per analytical dimension. In addition, another change we would like to implement to the annotation scheme is the decomposition of the

[8] In the original source: *"es una fórmula basada en la repetición, cuyo contenido verbal solo cobra importancia y es recordado al ser inmediatamente asociado a una melodía y a un esquema rítmico determinado"* (Abeillé 2013, p. 167).

unit “word” into “lexeme” and “morpheme” and the addition of new analytical dimensions such as “motivation/rationale”.

Finally, we would like to complete the study by closely examining more adaptations and perhaps attempt an automatic classification of the textual changes.

Acknowledgments

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