University of Marie and Louis Pasteur

Institute of Ancient Science and Technology

Faculty of Language, Human and Social Sciences

Master Thesis in Rare Books and Digital Humanities

Heinrici Chronicon Livoniae: Tools for Data

Anna Maria Hermann

Supervisor: Frederic Spagnoli

Besançon 2025

Bibliography

Introduction 4

Corpus 8

1. Arrival of Henry and His Affluences in the Baltic Region 9

1.1 Henry from Magdeburg 11

1.2 Influences on the Baltic Region 12

1.3 Mapping of Crusades Data 15

1.3.1 Map Made with Google Maps 16

1.3.2 Map Made with Kepler 22

2. Heinrici Chronicon Livoniae 26

2.1 The Bibliographical Overview 27

2.2 Versions and Translations 28

2.3 The Plot of the Chronicle 30

2.4 Impact 31

2.5. Transcription Methods 33

2.5.1 Transkribus 34

2.5.2 Google Lens 35

2.5.3 Manual Transcription 36

3. The Textual Data, Its Analysis and Visualisation 38

3.1. Word Frequencies 39

3.1.1 Voyant Tools 40

3.1.2 Python with Assisted AI 51

3.2 Comparative Word Analysis of the Three Translations 69

3.2.1 Jaan Jung's Translations Transcription 70

3.2.2 Julius Mägiste's Translations Transcription 74

3.2.3 Richard Kleis's Translations Transcription 78
3.2.4 Unique Words 78
3.2.5 Common Words 87
4. Website 97
Conclusion 98
References 101
Tables 103
Figures 104
Tools Used 105
Annex 1 106
Annex 2 107
Annex 3 108
Annex 4 109
Annex 5 110
Annex 6 111
Annex 7 112
Annex 8 113
Annex 9 114
Annex 10 115
Annex 11 116
Annex 12 117

Introduction

In recent years, the media has brought to our attention a wealth of coverage of wars and disputes between countries, which has generated a great deal of discussion around the world. At the same time, we cannot always be sure whether the information in the media is the truth or a distortion for the benefit of certain population and the suffering of others. In fact, we can never really be sure whether what is being shown, said or written is the truth, yet we often have no choice but to believe it, perhaps due to the lack of general knowledge as a person, due to non-evident counter objects on the subject, or even because of the lack of existing material on the case. Regarding to that we also need to keep in mind that no single piece of evidence can be completely reliable, especially if there might be a specific intention behind it. Therefore, if we want to know anything about what is going on in the world, we have to find the trust worthiest material possible, and if we want to dive into the conflicts of 12th and 13th century, we have to take up-to-date measures – manuscripts.

For that reason, I base my master thesis on the manuscript known as The Chronicle of Henry of Livonia, which allows me to do research about the chronicle Henry, his writing and the crusades in Baltic territories around his time. This manuscript is the best known for describing the territorial changes and interactions between the north-eastern tribes and considered as one of the most important sources by the historians describing the history of the conquest and Christianization of the eastern Baltic and formation of Livonia in what is now known as the territories of the two neighbouring countries in Baltics, Estonia and Latvia.

Throughout history, these two Baltic states, with the addition of Lithuania, have been under many different influences and have often been used as a battlefield by the great powers, both for religious purposes and simply to increase their dominance in the area. However, this complex past has not affected the aspirations of the three north-eastern countries for a better future, freedom and independence, which were last achieved in 1991, after a long period of occupation by the Soviet Union.

With this research, I aim to shed new light on an old historical text full of battles, visualising for the reader various aspects of the manuscript, for example, how in just few years it is possible for the conqueror to organize tens of Christianisation attempts

for different ethnic groups from a faraway land. To collect and visualise data for this work, I use various new technologies found in the field of digital humanities to try and see what the most useful tools are to gather data in such cases as the text of this manuscript and its Estonian translations. This is to show the importance of applying innovative technologies to old texts, as well as all the other artifacts, and which new research opportunities it opens up for researchers.

As an overall result of this work, I want to make a small contribution to the preservation of the cultural heritage of Livonia, because often, as we move forward in time, we forget what we have, what it was like before and where our roots come from. By keeping alive traditions and the study of our homeland and its surroundings, we can preserve centuries of activities and memories, and this is something that helps to keep a nation and its partners united and ready to fight collectively for its principles.

In order to make a work that covers several different parts, I have divided the work into four main chapters, which in turn are divided into smaller subchapters. The reader tends to notice a greater emphasis on subcategories in the third chapter, which uses different technological means and ways of approaching texts.

The main chapters are the following:

1. Arrival of the Livonian Henry

In the first chapter, I will give an overview about the chronicle Henry himself, his background, motivations to come to the Baltic region, as well as his role in documenting the central European crusaders in Baltics and how did the arrival of the German crusaders change the Baltic way of life. The chapter also brings attention to the number of different tribes in the area, their dynamics and how the German crusaders transformed the Baltic's political, social and religious life, giving also the historical significance of the writing and what it represents. To illustrate that, the chapter also includes two interactive maps. Firstly, with the places in Baltics where his mentioned battles and other events or factors influencing religious conversion took place, and secondly, marking the most frequently mentioned places in the text. Furthermore, this chapter will be also illustrated by the tables showing the data presented on the two maps. These maps, made with Google Maps and Kepler, will help us to see more precisely, which places and years were the most active ones in the means of conversion.

2. Heinrici Chronicon Livoniae

Second chapter consists of the bibliographical information, known history of the manuscript Heinrici Chronicon Livoniae and its preservation and the languages it has been translated to. Furthermore, this part includes the general overview of the plot to get a better glimpse of the text being studied and the manuscripts overall impact in the studies of the region. The most importantly, it also includes the study of different transcription methods where I will test and showcase three common ways to transcribe a text.

3. The Textual Data, its Analysis and Visualisation

In the third chapter, I will get to the part of digital humanities and start collecting data. For that, I will first use Voyant Tools to find out the most common Estonian and Latin words used in the Kleis translation's Liber Primus. I will examine whether the most common words in two languages are mostly carrying the same meaning or are they rather different from each other. The last action with these words is to create a table to showcase their frequency of occurrence as well as to find out the most frequently mentioned tribes in the book. After this I will use Python programming language with the help of Artificial Intelligence to find out which places and personal names were mentioned most in the book. That is followed by the comparative word analysis of the three Estonian translations of the chronicle, where I will use again Python with assisted AI to find the unique words and common words between the three translations of the MS.

4. Website

The fourth chapter provides a brief overview of the website created for this master thesis, introducing it, explaining its objectives, and visualizing the results, while also showing the structure of the website.

The main objectives of this study are:

(1) to understand better the relationship between Livonia and the neighbouring tribes and countries trying to invade it and its surroundings.

(2) to analyse the course of crusades in Livonia by creating a list and an interactive map with indications of the influences and battles that took place to promote Christianity.
(3) to give an overview of the Livonian Henry's Chronicle's preservation.
(4) to create a modern transcription of the book both in Latin and Estonian.
(5) to find out the differences in the Estonian translations of the MS and to analyse them.
(6) to find out the most common words, places, names and tribes in Estonian or/and in Latin by using DH tools.

The previously mentioned objectives have also given rise to the key questions that I seek to answer in this work:

(1) which important crucifying-related events are mentioned in the chronicle and what years do they take place?
(2) if and how the manuscript is being preserved?
(3) what are the differences between the three Estonian translations and why they exist?
(4) what data can we make out of the corpus and why is it useful?
(5) what are the modern tools we can implement in this and similar DH works?

Research on this topic will give us a good insight on several levels: we will learn about the chronicle itself, its preservation and its content. It will also give us an insight into the historical aspects, and by looking at the form of the work we can also see the specific features of this manuscript. Applying digital humanities to that in the sense of mapping, transcribing the text, making tables and linguistic clouds will provide advantages for future researchers on the subject for whom these data have already been developed. In a sense it is also a way to preserve the heritage and storage it in the forms of data.

Corpus

Henrik [Henry] (13 century). *Henriku Liivimaa kroonika*. manuscript, 4°, 20 cm, Tallinn. Online: https://www.digar.ee/arhiiv/nlib-digar:101209

Henriku Liivimaa kroonika. Translated by Richard Kleis. Research editing and commentary by Enn Tarvel. Tallinn: Eesti Raamat, 1982. Online: https://osiliana.eu/wp-content/uploads/2021/09/HLK.pdf

Läti Henriku Liiwi maa kroonika ehk Aja raamat ; 1 vihk. Translated by Jaan Jung. Tartu: Laakmann, H., 1882. Online: https://www.digar.ee/viewer/et/nlib-digar:46573/80334/page/1

Henriku Liivimaa kroonika. Translated by Julius Mägiste. 271, [1] lk. ; 22 cm Tallinn : Eesti Päevaleht. Akadeemia, 2008. Online: https://archive.org/details/henriku-liivimaa-kroonika-2008/mode/2up

1. Arrival of Henry and His Affluences in the Baltic Region

Over the centuries, the three Baltic States have been invaded and influenced by many forces from both East and West, leaving behind traces of their forced and sometimes also easily adaptable culture: traditions, architecture, language, literature etc. These varied cultural aspects have influenced the lives of local people for decades or even hundreds of years, whether as the buildings on the urban landscape or in the distinctive customs of frequent festivals. Approaching literature, and more specifically the chronicles distinctive to the Middle Ages, such as the *Livländische reimchronik*[1] in German, but also, Balthasar Russow's *Chronika der Provintz Lyffland*[2], one finds them to be necessary material for studies of the past. However, along with these we cannot forget the most informative and highly regarded chronicle about the Baltics history, the Latin-language *Heinrici Chronicon Livoniae*[3].

Henry's Chronicle of Livonia, describing the Crusade between Livonia and Estonia in the early 13th century, is one of the best-known texts describing Estonian history (Kaljundi, 2008, p. 141) and if Henry's writings had been lost, we would know very little about the Baltic conquests from the end of the 12th to the beginning of the second quarter of the 13th century (Henricus de Lettis, 1982, p. 5), due to the scarcity of written material and overall material evidence found from the region. Linda Kaljundi (2008, p. 141) mentions in her article "Henriku Liivimaa kroonika tõus rahvusvahelisele teadusareenile"[4] that there is no other source that is as well known in Estonia, both in terms of research and popularity, but also as the main narrator of Estonian written history and the beginnings of foreign rule. This context gives an idea of the importance of the text, and of the good fortune that few later transcriptions of it have been found through years in different locations.

The resurfacing of the text in recent years can be seen in numerous studies completed and still on-going, not only for substantive study, but also as a means of better preserving and transcribing the text. As an example of this is the Department of Classics at the University of Tartu, which by creating their own database is now

[1] Livonian Rhymed Chronicle (anon.)
[2] Chronicle of the Province of Livonia (Balthazar Russow)
[3] Livonian Chronicle of Henry (Henry)
[4] Personal translation by the author of the thesis. (Translation of the name of the article: "The rise of Henry's Livonian Chronicle to the international scientific arena")

making transcriptions on various texts including the chronicle. Furthermore, lately several new translations and reprints of old translations have been published, and the name of the Livonian chronicle appears more and more often in research papers and conference presentations, but still this voluminous body of research has so far remained scattered (Kaljundi, 2008, p. 141).

Although the text of the chronicle is versatile and covers many different possible areas of research, it also has many issues. As a text about wars, baptisms and multiple tribes/ethnicities, scholars and readers from different origins will have many different perspectives and understandings of the meaning of the text. Since the middle of the 19th century, national historiography has been more concerned with translating this text to suit its own interests than with interpreting it and due to that we know rather little about this historical chronicle itself and the world of ideas and values expressed in it (Kaljundi, 2008, p. 141).

First examples for this could be the translation difficulties of the title or the assumption of the chronicles real author, who is most likely presumed to be repeatedly mentioned priest Henry (Henricus de Lettis, 1982, p. 5). From there on, the author Henry was long thought to be from Latvia, but from the mid-20th century it was found that in the end he might have alternatively come from Saxony (Kaljundi & Tamm, 2022), a state of a country that we know today as Germany. To this day, there is still no fully conclusive answer to these and many other hypotheses, which is why the chronicle is still an ongoing research object for many scientists dedicated to the Livonian heritage. Nevertheless, it is not just the author or physical history of the book itself that interests them, but also its content, which most likely describes the endeavours of the time, but at the very least could just be someone's creative brainchild. Because of the historical and important nature of the work, its content can be studied in a wide range of contexts, such as historical, literary, linguistic, textual, religious, international law, as well as material heritage and many more. When taking all these areas together, we can see how many research options there are as well as different lines of enquiry it brings together, possibilities it gives and the value it adds to all of these research fields and for the Baltic history in general.

1.1 Henry from Magdeburg

The origin of the priest, with a multitude of names; Läti Hen(d)rik, Henricus de Lettis; Heinrich der Lette, is uncertain, but he is estimated to be from Germany, around Magdeburg (EEVA, n.d.). Centrally located, this region could have possibly been a hub of religious activity, providing him with an influential environment for his formative years. In his youth, Henry had also been educated in a monastery near Lübeck, whereas some years later he entered the service of Albert, Bishop of Livonia (EEVA, n.d.), giving him an important push of his career by inviting him to Baltics. In the year of 1205 Henrik arrived in Riga and in 1208 he was ordained priest of the Latvians of Ymera, and as he was proficient in several languages, he accompanied many crucifying journeys to the Estonian lands (EEVA, n.d.), which led us having a detail rich writing.

In his script, Henry cites the desire of lords and comrades, from which bishops and priests are then inferred, as the motive for writing the chronicle on his own initiative (Henricus de Lettis, 1982, p. 7). The desire for documenting could have been in hopes to record the progress of religious activities and the performance of the mission, as well as possibly to write its own history in case the chronicle should be found in the future. An indirect motive could also have been the arrival of the Pope in Livonia to hand over the finished work, pointing out in his closing remarks that his work contains only what he has seen or heard from eyewitnesses or fellow travellers, i.e. that the main source is his own or his companions' memories (Henricus de Lettis, 1982, p. 7). Therefore, we cannot take the text as the whole truth, because there is always a chance that certain instances may be an exaggeration, lie, a misremembering of the truth or a question of perspective of the writer or eyewitness. But even if we take this into an account, in one way or another, Henry's writing provides a perspective as well as an opportunity to get a glimpse of the amplified aspect of the chronicle - of conquest, missions, cultural imaginaries of conquest, conversion and cultural exchange(Kaljundi & Tamm, 2022). This distinctive combination has given historians ample opportunity to explore different aspects of the era, and we will do so as well in the following sub-chapter, looking in more detail at Christianisation and conquest, the political order, the changing social and cultural landscape, and the political and economic influences from

the West that affected the way of life of the Baltic people during and after the early 13th century.

1.2 Influences on the Baltic Region

By the first half of the first millennium, two major tribal groups were emerging in the Baltic areas which were Baltic people in the south and (Baltic) Finnic people in the north. The (Baltic) Finnic people were the Estonians, Livs and Setos, from which the latter by some scientists has also suggested to be a totally separate ethnos. The northerners were contrasted by the southern more numerously diverse ethnic group the Baltic people, which consisted of the Curonians, Semigallians, Latgalians, Selonians, Samogitians, Aukštaitians, Youtvingians, Scalvians and Prussians. The relations between the two tribal groups and even inside themselves were often complicated as alongside commercial and cultural activities they also simultaneously organized raids on each other's lands. (Kiaupa, Mäesalu, Pajur & Straube, 1999, pp. 29-30)

Despite their differences, the people on the eastern Baltic shore shared a common trait: unlike their neighbours, they had remained pagan and had not yet adopted the Crusade by the middle of the 12th century (Kiaupa, Mäesalu, Pajur & Straube, 1999, p. 39). Although Christianity has been prevalent in Europe since the beginning of time, Kiaupa et al. (1999, p. 39) suggests that the Orthodox Church, which ruled Russia, was not very active in its missionary work, and the Catholic Church, which ruled Poland, Sweden and Denmark, did not succeed in its attempts to spread the faith on the eastern shores of the Baltic Sea from the 10th century onwards. In addition to not turning the faith, the people of the eastern shore had not yet eighter developed states, meaning that provinces were considered the most important local units, also with an emerging upper class with hereditary power (Kiaupa et al., 1999, p. 39). From that we can assume the pre-state of the emergence of statehood of these provinces, not yet having the centralized public authority but having the local administrative units and hereditary elite referring to social stratification and the development of the early feudal order.

The Baltics of Middle Ages, where the only faith practised was paganism, did not want to feel Western influences, especially religious ones. We can see the evidence of this in several passages in the Chronicle, where Henry described Livonians who tried to

fool the Germans into building fortresses for them by promising to turn into the faith of Jesus Christ, but later reneging (Henricus de Lettis, 1982, p. 25), as well as Livonians agreeing to a peace, meanwhile continuing killing Germans (Henricus de Lettis, 1982, p. 31).

The first proper crusade for Christianisation in the Baltic regions, more specifically in the modern Estonian Latvian area, began in the late 12th century with the arrival of the German monk Meinhard, who first started to persuade Livonians to Christianity. By the words of Kiaupa et al. (1999, pp. 39-42) it happened after the Hanseatic tradesmen ventured out to the Baltic Sea into the lands of pagans, which seemed as a favourable opportunity to not just trade western and central European goods but also as an opportunity to spread Christianity and gain new territories amongst that. With the support of the Roman papal court and the empire, crusades against the pagans began and by the end of the 12th century German merchants were frequent visitors to the downstream of Livonia, now known as Daugava River (Kiaupa et al., 1999, pp. 39-42).

Berthold, the member of the Catholic monastic order and the successor of Meinhard who did not manage to change much with his too lenient attitude about his task, led the first raids in 1198 with the aim of subduing the recalcitrant Livonians, but got himself killed in battle soon after. (Kiaupa et al., 1999, pp. 39-42). This once again brought the need to find a new leader for the church, one who could finally get the crusades going. To the delight of the church, during the tenure of Bishop Albert from 1199, a major season of crusading began and the new leader not only made war but also created the Order of the Brothers of Christ, simultaneously known as the Order of the Sword Brothers (Kiaupa et al., 1999, pp. 39-42). The Knights of the Order of the Sword Brothers were required to be of noble birth and take vows of obedience, poverty and celibacy, meanwhile living in district castles (Britannica, 2011), meaning that not just anyone could get the job, but only the chosen few, who had to follow a certain strict regime. It was not just a prestigious occupation, but a sacred mission to save the Baltic peoples from the barbaric considered paganism.

At this point, the crusade plan became more of an idea of conquering territory as the smaller tribes Livonians and Latgallians found it difficult to resist the invaders and began gradually to surrender to the Western powers (Kiaupa et al., 1999, pp. 39-42).

This also started to change the power dynamics in the Baltic shore as the area of Christianised people started to raise and so did the success of crusaders. That is seen by the crusaders reaching to north to the Estonians, who for a few years were able to fight valiantly but were finally subdued, followed by the Curonians from south of the Riga, and the Semgallians who decided to voluntarily embrace Christianity. (Kiaupa et al., 1999, pp. 39-42)

Nevertheless, in 1236, the crusading troops were devastatingly defeated in a raid on Lithuania, slowing the momentum of the warriors for a time and causing the emergence of the Livonian branch of the Teutonic Order following year when the Order of the Sword Brothers was merged with the Teutonic Order (Kiaupa et al., 1999, pp. 39-42). After that, one of the priorities for the Teutonic was to secure control over Lithuanian lands that separated the order's two major territories (Kaljusaar, 2018), however in 1251, the Lithuanian ruler Mindaugas allowed himself to be baptized with his comrades in order to avoid the formation of a nationalist coalition and the break-up of the newly enlarged country (Kiaupa et al., 1999, pp. 39-42).

By the battle's recorder in the chronicle, we can see that people were always ready to stand up for their principles, however over the time it got more complicated. This was the case after the founding of the initial Order of the Sword Knights, a clerical order of knights in Livonia in 1202-37 to subjugate the Livonian, Latvian and Estonian tribes (EE, 2003), mentioned earlier. 1/3 of the land conquered by the Order in the years 1207, 1211, 1213, 1220, 1224, 1228 and 1233 became a feudal land and six convent castles were built on it, including also having about 110-180 knights, 30-45 priests, nearly 500 servants and about 700 mercenaries (EE, 2003). This meant a total change of societal regime and the beginning of feudalism[5].

The fiefs and vassal, who shaped the feudal system, had to serve their liege lords who mainly came from Northern Germany, with counsel and force (Kiaupa et al., 1999, pp. 51-52). It means they had to help the lord with administrative and diplomatic things as well as guard the castles and provide resources for the war, such as horses, boats or weapons. Although, this new political system did not benefit the indigenous Baltic

[5] Feudalism is a medieval hierarchical social order in which rulers and grand feudal lords gave their vassals land to use, in return for which they had to serve in his army and perform other duties; peasants working in the fiefs had to fulfil the duties assigned to them by both their lord of the fief and the state, and pay tribute in return for protection (EE, 2006).

people on their land as they had pulled clear distinction between the foreigners and local people, who were oftentimes seen as the lower-class (Kiaupa et al., 1999, pp. 51-52). Such injustices and the imposition of alien systems and religions did little to support the lives of local people, and the situation did not seem to be improving eighter. That can be seen by the ancestors of the Estonians and Latvians who had to go to feudal raids until the end of the 15th century, meanwhile their status deteriorated steadily and day-by-day it became more difficult for non-Germans to even obtain their citizenship (Kiaupa et al., 1999, pp. 51-52).

From all this, we can see that the merchants' simple desire to send their goods to the eastern shore of the Baltic Sea developed into something much more revolutionary. What might have remained a modest trade between East and West became a turning point for the entire modern Baltic region. The spread of Christianity in the East brought with it a host of battles, deaths and decades of territorial change. Along with the German immigration, the whole socio-political structure was reshaped, influenced both by the conquests and by the new knowledge brought from the West, which guided the development of local societies. To give a better overview and understanding of the spatial and historical context in given time, modern data mapping tools provide an interactive way to showcase the locations and activities as well other related information which in this works context are found in the following sub-chapter.

1.3 Mapping of Crusades Data

There can be several reasons for mapping data, namely geographers map data to visualise, analyse and interpret spatial relationships, patterns and processes on the Earth's surface, which are necessary for their daily work and research. Also, historians or geo-humanitarians may map data in relation to history to visualise their projects and to produce teaching materials. In the present work, through mapping, we want to show one of the visual possibilities of digital humanities, thus demonstrating the possibilities for individualising research and for the interactive transmission of data. To this end, we will use two mapping applications, Google Maps and Kepler, to test their capabilities and identify their similarities and differences. Specifically, we use Google Maps to map the manually marked down battles and other Christianisation efforts

found in Liber 1, 2 and 3 with their assumed years, book pages and paragraph numbers, and Kepler to generate a heat map based on pre collected Python data of the locations most mentioned in the text from all four books. At the end of the particular sub-section, we will also find all the data added to the map in a plain table.

1.3.1 Map Made with Google Maps

Google Maps is the first mapping test of the work, as it is one of the most widely known map applications for Google users, allowing them to see the whole world in different map types such as terrain, transit, biking and satellite view etc. In order to start mapping in this application, one needs to go to the My Maps page in the Google search engine and click on Create a new map.

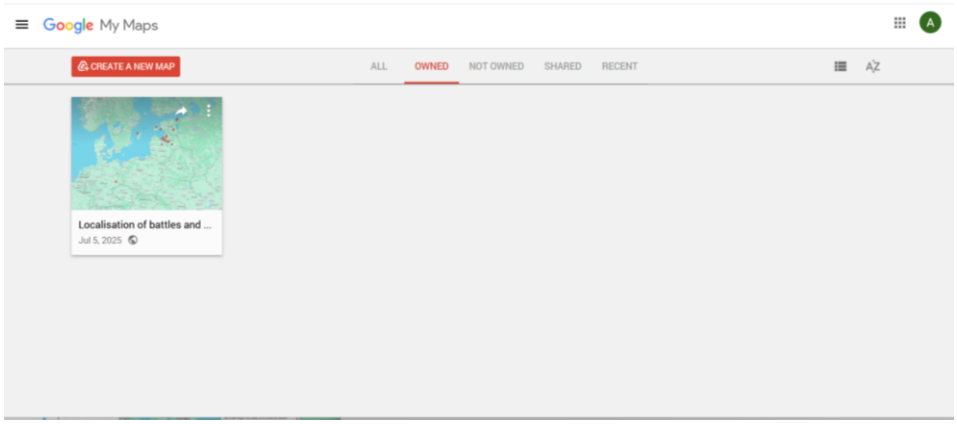


Figure 1. The Creation of a New Map on Google Maps

A view of the map will then open, after which it is necessary to look down from the search bar and click on Add marker. You will then be given the option to mark the location, and a box will open where you can enter a title and description. For the present work I have marked all the Christianisation events described in the first three books of Richard Kleis's translation and preceded them with the corresponding page and paragraph numbers, in some cases with definite but in others with suggested year numbers.

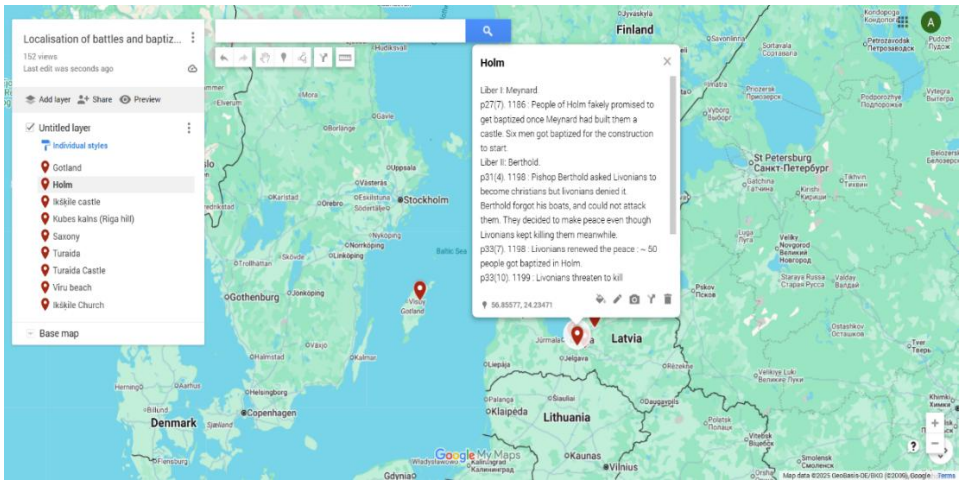


Figure 2. The Localisation of Battles and Baptizing on Google Maps

These are the entries added to the Localisation of battles and baptizing map on Google Maps based on the book's Liber 1, 2 and 3 in chronological order per named place:

Aizkraukle

79(6). ~1207 : Christians raided the fort of Selonians.

Daugava

53(9). ~1204 : Livonians made peace with Germans and promised to let themselves soon to be baptised.

89(5). ~1208 : Christians went near Väina to preach.

Holm

27(7). 1186 : People of Holm faked a promise to get baptized once Meynard had built them a castle. Six men got baptized for the construction to start.

31(4). 1198 : Bishop Berthold asked Livonians to become Christians, but Livonians denied it. Berthold forgot his boats and could not attack them. They decided to make peace even though Livonians kept killing them meanwhile.

33(7). 1198 : Livonians renewed the peace: ~ 50 people got baptized in Holm.

33(10). 1199 : Livonians threatened to kill clergymen if they stay there after Easter so in fear they fled back to Germany. The same future was destined to German merchants, but they sometimes bought themselves out by giving gifts to the headmen.

39(5). ~1202 : Semgallians burned the Holm church down. Christians wanted to make peace in Riga.

61(9). 1206 : Germans put the fort of Holm on fire, Turaidans wanted peace, and the people of holm are imprisoned and taken to Riga.

65(12). ~1206 : Polotski king Woldemar surrounded the Holm fort.

Holm castle

35(1/2). ~1190-1225 : Crusaders and Albert went to Livonia with 23 boats. They went to Holm and then to Ikšķile, where Livonians killed some of them. Later they went back the same road and got raided again.

Idumea

69(15). ~1206 : Baptism of Idumea people and Latvians.

Ikšķile castle

25(6). ~1185 : The building of Ikšķile castle and the baptising of half of the Livonians who after reneged on their promise to believe in God.

43(4). ~1203 : Polotski king raided Livonia and Ikšķile fort but Livonians gave him money, which resulted him leaving. When he tried to take over the Holm castle he had to give up as some Germans had already found their way in there.

Ikšķile Church

25(3). ~1184 : Building Ikšķile Church and first sermons.

25(4). ~1184 : First people got baptized: Ylo the father of Kulewene and Viezo, the father of Alo.

33(7). 1198 : Livonians renewed the peace : ~100 people got baptized in Ikšķile.

33(8). 1199: The clergymen escaped from Ikšķile to Holm after Livonians attacked them and had stolen their goods, including horses.

Jersika

45(1). 1204 : Lithuanians and some Livonians came to take back the stolen animals from Riga but got only three horses.

Koknese

81(8). 1208 : Conquering of the Koknese castle.

Kubes kalns (Riga hill)

31(6). 1198 : Livonians killed Berthold.

Lielvārde

77(5). ~1207 : Rigans and Latvians gathered to fight Lithuanians.

Lithuania

85(2). 1208 : Raid to Lithuania with Semgallians.

Livonia

67-69(14). ~1206 : Sending preachers all over Livonia: Alebrand to Turaida, Alexander to Metsepole, Daniel, to Lielvārde and Sidgunda. Then he goes a baptises Reminians, Aizkraukleians, people near Dabriel fort and the Wends.

71(1). 1207 : Whole Livonia was baptised.

75(3). ~1207 : Donation of the third part of Livonia for the brothers of military service.

Rembante park

53(11). ~1204 : Lielvārde and Ikšķile Livonians attacked Germans in the forest.

Riga

39(2). 1202 : Monk Engelbert came to Riga and started to spread the word of Christ.

43(5). ~1203: Jersika king and Lithuanians stole animals and imprisoned two priests while also killing the Theoderic Brudegame.

47-49(2). ~1204 : Lithuanians wanted to attack Estonians, but Germans heard about it and cooperated with Semgallians to stop them.

53(12). ~1204 : Germans went to demand for "fruit tax" but Livonians hidden in forest killed some of them. Livonians were still afraid and let themselves to be baptised.

55(14). ~1204 : Christians organized Profet Games for the newly crucified to learn the basics of Christianity.

61(8). 1206 : Germans went to fight with Livonians because they were killing people and stealing horses.

71(2). 1207 : Priests were put in the parishes and churches were being built.

Saaremaa

67(13). 1206 : Danish king and Lund head bishop came to Saaremaa and gave theological practises.

Saxony

33(10). 1199 : Livonians threatened to kill Germans. In fear they fled back to Saxony to also get a new bishop.

Sea near Estonia

45(3). 1204 : Estonians attacked Germans who were coming with boats, but Germans defeated them.

Turaida

27(10). 1191 : Livonian from Turaida promised to let himself get baptised when Theoderic cured him. He was baptized but then died.

63(10). ~1206 : Germans went to Turaida with Semgallians and raided the fort. Caupo on the other side in Dabreli castle saw it and got ready to fight, even though half of the men fled to forests.

77(5). ~1207 : Lithuanians raided Turaida.

Ugandi

89(6). ~1208 : Livonia and Latgale got baptised. Christians went to Estonia.

Viru Beach

29(13). 1196 : Bishop, Swedish Hertzog, Germans and Gotlanders fought with Curonians and ended up in Viru beach. While Viru people were negotiating religious issues with Germans, Hertzog took the goods and sailed away.

Visby

41(2). ~1202 : Estonians and German Christians got into a boat battle because Christians do not want Estonians to come to Visby.

Ymera

81(7). 1208 : Baptising Latvians near Ymera.

89(6). ~1208 : Livonia and Latgale got baptised. Christians went to Estonia.

Zemgale port

37(7). 1201? : Zemgale port was put under port ban and merchants were killed if entered.

The following image of a map illustrates the previous list of entries with all the mentioned places laid out:

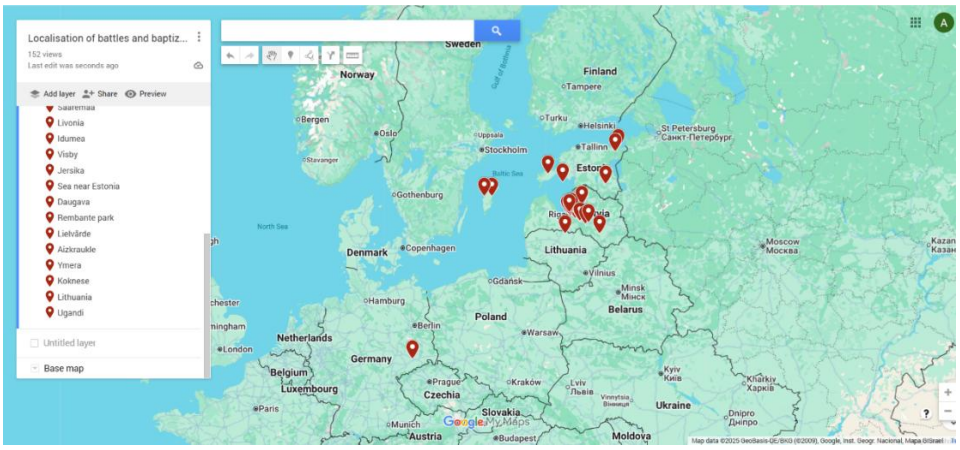


Figure 3. The Locations on the Map

To get an aim of the most active years from the list I will also attach a table visualizing the quantity of different events mentioned for each year:

Year	Count	Year	Count	Year	Count
1184	2	1196	1	1203	2
1185	1	1198	4	1204	7
1186	1	1199	3	1206	7
1190-1225	1	1201?	1	1207	6
1191	1	1202	3	1208	6

Table 1. The Counts of Battles and Baptizing Events Mentioned on the Google Maps Map.

By the data gathered, this table shows that in the three first parts of the book the most active years were the 1204 and 1206 with a count of 7 events for each, followed by 6 events both on years 1207 and 1208.

The use of Google Maps for this test has been simple, both in terms of determining locations and in the use of the tool itself. As additional features the tool also allows the user to mark directions, draw lines, measure distances and add other layers. However, it does have one drawback, which is pasting additional text to previously edited text boxes. In order to add text, you have to add all the text to textbox at once, otherwise clicking enter saves only the previous entry and does not add the supplementary. In this case it is more efficient to copy and paste the previously added text from the box to a notepad file and then add new text to it and paste them together back into the location description box. That will enable to save it all without deleting the supplementary.

The following link enables to interact with the created map in Google Maps:

https://www.google.com/maps/d/u/0/edit?mid=16LJlmFZhzvn0aoxLV-eer6kWQkJTnEQ&ll=55.63582161647558%2C18.406631955950765&z=5

1.3.2 Map Made with Kepler

For the second map, a heatmap created in Kepler.gl, I use the 30 most frequently mentioned place names and their frequencies, as identified through a Python script in the 3.2.2.3 Latin place name frequency with Python and Cursor section, which's full

result can also be found in the Annex 1. To create the map, user first needs to upload a CSV file containing the necessary data for mapping, in particular case I added ID, Place name, Latitude, Longitude and the Count (of occurrences). The ID number for a name was determined by the decreasing occurrence rate of the place name which was marked by the increasing ID number. The coordinates (longitude and latitude) are approximate and were determined by translating the Latin names into their modern Latvian or Estonian and using Google Maps to locate them to then acquire the coordinates, sometimes for bigger areas as centred from the place's approximate epicentre, therefore, sometimes generalized.

The formed dataset that was used for the creation of the map:

ID	Place Name	Latitude	Longitude	Count
1	Lyvonia	57.3	25	189
2	Riga	56.9496	24.1052	138
3	Duna	56.95	24.1	77
4	Estonia	59.1	25.3	70
5	Wenden	58.1012	25.269	55
6	Ugaunia	58	26.4948	51
7	Dacia	56	10	34
8	Saccala	58.5167	25.3833	33
9	Osilia	58.4133	22.4964	28
10	Vironia	59.25	27.4	27
11	Ymera	57.55	25.42	27
12	Ykescola	56.83	24.5	26
13	Semigallia	56.4	23.3	25
14	Holme	56.52001	24.21001	24
15	Gerwa	58.8867	25.5572	22
16	Dunemunde	57.04811	24.0331	19
17	Plescekowe	57.81959	28.33424	18
18	Revele	59.2	25	17
19	Thoreyda	57.11	24.5	17
20	Viliende	58.22	25.36	17

21	Beverin	57.51982	25.60793	16
22	Gothlandia	57.44812	18.460374	16
23	Ydumea	57.39759	25.04198	16
24	Kukenoys	56.39	25.26	14
25	Gercike	56.78577	26.3757	12
26	Pala	58.489	25.4715	12
27	Rotalia	59.10855	23.6556	11
28	Saxonia	51.1045	13.2017	11
29	Sontagana	51.10454	13.20173	10
30	Ploceke	55.29	28.48	9

This information was uploaded to the Kepler.gl site, giving then an image of interactive map, which could be modified. To make the map more visually appealing and to make the higher tensity points (places with higher mention count) to stand out more I needed to expand the radius of dots. For that I had to go to the layers section, select the arrow on point layer box and then go to radius and expand it in my case to 50. After that I also had to click on the three dots next to it to set Radius Based On to int Count.

The visualisation of the finished map is following:



Figure 4. The Visualization of the Finished Map on Kepler

The following image shows how the map interacts with the user. Sliding over a point, showing the same information as in the table provided before:



Figure 5. The Maps Interaction with the User

Kepler.gl has proven itself as an easy-to-use map compilation system that requires minimally only an excel spreadsheet with coordinates, names and in need, additional information. It also provides a variety of visualisation options, in 3D view and by different marking shapes as well the possibility to change their colours.

Link to the interactive map is found here:
https://kepler.gl/demo/map?mapUrl=https://dl.dropboxusercontent.com/scl/fi/45iw4ye89z17rnsf8g1dm/LHC-map-Copy-Copy.json?rlkey=8g046qn1t4p0lbtubf1ob95w9&dl=0

To compare Kepler to the previously tested Google Maps, it is deemed to be more technical and less user friendly for a general, everyday user, allowing also bulk uploading datasets, whereas in Google Maps it has to be done manually. Therefore, Google Maps is more efficient for simple mapping and navigation while Kepler could be used for visualizing larger animated geospatial datasets.

2. Heinrici Chronicon Livoniae

The period up to the middle of the 18th century can be seen as the first major stage in the development of Estonian historiography, however, when calling it the period of the chronicles, it has to be kept in mind that this can only be a conventional, conditional title, which leaves the genre diversity of the historiography of the time in the shadows (Vahtre, 2001, p. 10). That being said, the "Chronicle period" is a generalized and highlighted label and does not reflect the full complexity of historical output at the time, meaning that there was a variety of other writing forms and genres in use. Even though, the people living in nowadays known Estonian areas started to write down the story of their land quite late, it does not mean that there are no previous historical overviews of it, which, for example, were written by immigrated chronicles for various reasons.

But what is a chronicle? The Cambridge Dictionary (n.d.) defines it as the record of events in the order in which they happened. This is also what we see when we read the Livonian chronicles. Descriptions of the doings of three different bishops, tribes, warriors and crusaders in chronological order, with no explanation or rare leaps into the future or the past in between. Everything we read is put down by the writer in a specific chronological order according to what is happening. This is ideal for research work, because you know where the text is going from where, and all you have to do is turn back a page to go into the past. However, this may not be the case for non-fiction books, as often the present page may be about a character's past activities, but the previous page is describing the main narrative of the characters present moment doings.

Chronicles could be found in all places of the world as they were a way to retrace the history. This also means that we do not have a scarcity of them, and they are always being studied as a great source of history. We can find Monastic and royal records from Europe such as Chronica Majora and Anglo-Saxon Chronicle as well as outside of Europe like the Aztec Codices, which in their case are instead pictographic manuscripts documenting their ways of life a long time ago. In the latter example, we can note that the way we think chronicles look and are written may not always be the only way to record military campaigns and events. Different cultures may also have

many differences in their manuscripts of chronicles according to their own writing systems and storytelling styles, which may be further differentiated by the specific training of the author in writing chronicles, as well as his own writing style.

As the most know chronicle from the Baltics area, Heinrici Chronicon Livoniae, has given us a lot of information and overview of the happenings in the north-eastern area at the time, but we can not also forget the chronicle as an object itself as it carries historical elements and value. Therefore, in the following subchapters I will compile an overview of the book itself, its bibliographical information, versions, translations, its preservation until this very day, including also the plot.

2.1 The Bibliographical Overview

Following is to illustrate the main bibliographical information about the manuscript:

Title	Heinrici Chronicon Lyvoniae
Author	Henry of Latvia (Henricus de Lettis)
Original language	Latin
Date	Early 13th century
Format	Exact format is unknown
Sources	The original manuscript does not exist/ is not found

Table 2. The Bibliographical Overview of the Manuscript

As we can see the Manuscript Heinrici Chronicon Lyvoniae supposedly written by Henry of Latvia (Henricus de Lettis) is written in Latin in the early 13th century, by the information possibly gathered from the manuscript itself and other manuscripts which

may contain the descriptions of the same events taking place in a dated way. As the original of the manuscript is not found or does not exist anymore we cannot be sure on its exact format nor have any definite sources to lay on.

2.2 Versions and Translations

The nowadays Henry's Chronicle is a reconstruction, as neither the original nor any direct copy of the manuscript has survived. However, the manuscript tradition has been reconstructed in the years 1926 and 1927 by Leonid Arbusow, who has marked down a total of sixteen copies of the manuscript from the 14th to the 16th century, none of them containing the complete text, but suggesting the existence of eight or nine other manuscripts which have yet to be found. The only surviving manuscript from the Middle Ages, more precisely 14th century, is the Codex Zamoscianus, which is the basis for all modern editions, being followed by the second oldest manuscript Codex Oxenstierna, also known as the Codex Hanoveranus. From there on, the sixteenth century gives us Codex Skodeisky, Codex Knüpfer, the manuscript of the Tallinn Gymnasium and also an extract from the collection of Baron Toll, followed by the 18th century providing some additional texts. (Kaljundi & Tamm, 2022)

There have also been many translations of the chronicle, in various languages, allowing those interested in history and the Crusades to consult the work in preferred language. Often the translations of the text are also parallel translations, making it possible to read the original and translated versions side by side, which is particularly useful for scholars, who do not have to have several versions in their hand for different languages at once, but can get page after page both versions information from a single book. That might be also useful for somebody who wants to learn any of the languages or compare them. Such layout also makes it easier to carry out linguistic analysis and other comparative works done between texts. These kind of books, bilingual, often parallel translations, are for example available in Estonian, Latvian and Russian. Below is an overview of some of the translations and where they can be found in the most common languages:

Latin:

Starting with Latin version, we can find one *Heinrici Chronicon Livoniae* manuscript in Eesti Rahvusraamatukogu (Estonian National Library), which is most likely written in the end of 17th century.

Estonian:

Various translations in Estonian to manuscript called *Henriku Liivimaa kroonika* are available from translators such as Julius Mägiste (1962), Jaan Jung (1881-1884) and Richard Kleis (1982), the latter being the most used by scholars, compiling a parallel translation and editor Enn Tarvel's comments.

Latvian:

Latvia as one of the most dedicated countries for obvious historical reasons has also three more famous translations of *Indriķa hronika* starting from Matīss Siliņš's (1883), then Jānis Krīpēns (1936) and lastly Ā. Feldhūns's (1993), who has made a parallel translation along the original version.

English:

The only English translation of *The Chronicle of Henry of Livonia* is made by James Arthur Brundage in 1961, later also enhanced by the same author in 2003.

German:

Germans have quite a few translations like *Livländische Chronik* from Albert Bauer (1959) and also from Johann Daniel Gruber (1747).

Lithuanian:

From Lietuvos nacionalinė Martyno Mažvydo biblioteka (National Library of Lithuania) it is possible to also find a Lithuanian translation of *Livonijos kronikos* translated by Hermanas Vartberge (1991).

Finnish:

In the Kansalliskirjasto (The National Library of Finland) we can find the translation of *Henrikin Liivinmaan kronikka* in finnish, which was translated by Maijastina Kahlos and Raija Sarasti-Wilenius and published in 2003.

Russian:

There are also some translations of *Хроника Ливонии (Chronika Livonii)* to Russian including С.А. Аннинский (S.A. Anninskij) 1938-year edition published in Moscow.

Italian:

From the Latvijas Nacionālā Bibliotēka (Latvian National Library), Herzog August Bibliothek (Herzog August Library) and Mediatheque de Poitiers (Poitiers Media Library) we can find the *Chronicon Livoniae: la crociata del Nord (1184-1227)* translated by Piero Bugiani, which is a modern scholarly edition of the text, making the original Latin text more accessible to Italian speakers as it includes a parallelled translation and detailed commentary.

The previously mentioned works are not all the possible manuscripts or translations, but they give a small idea of how many different translations there are and how many different languages they can be found in. We can also see that there have often been several more recent and improved translations in the same language over the years, which also shows that interest in the text has not waned, and people are still looking for ways to improve on previous publications.

2.3 The Plot of the Chronicle

The Livonian Henry's Chronicles main storyline is about the priests who came to the Baltic shore to spread Christianity. By the four books, the nowadays editions of the text are also commonly divided into four uneven parts, starting with the first arrived priest Meinhard who tries to spread Christianity in a rather peaceful way, building castles and preaching. After his death the role was taken over by the second more aggressive minded Berthold who found his fast end in the battle, he had organized himself. The third more dominant figure in the whole manuscript was bishop Albert, who managed to organize plenty of crusades against the pagans and also found the city of Riga in 1201 as well as the Order of Livonian Brothers of Sword. The fourth and last figure of the narrative was most likely the so-know author of the chronicle itself — Henry — who was religiously present in different kinds of events as an eyewitness

and a chronicle. Throughout the chronicle, we follow the similar structure of how the Germans went around trying to Christianise different tribes and how the tribes fought with Germans and each other for different reasons. In the same way, throughout the four books, we see the different techniques used by the different priests to subjugate the people, what worked and what did not, and what brought rather destruction than the new promising Christians.

2.4 Impact

As one of the most important historical documents of the Baltic region, the Livonian Henry's chronicle is a detailed record of the Crusades in the Baltic countries, showing the many parties involved, the interactions and relationships between tribes and priests. An instance of rivalry and betrayal can be seen, when during a battle between a priest, a Swedish Hertzog, Germans and Gotlanders against the Curonians ending up in Viru beach, the Hertzog seized the goods and sailed away while Viru people were negotiating religious issues with Germans (Henricus de Lettis, 1982, p. 29). That is to show that there was not complete trust between different leaders and tribes even if sometimes they fought on the same side. From there you can already see the difference between today's warfare, because there are often treaties between states at play, which is why betraying a partner state can result in even greater losses for the betrayer, both at the national level and for the main betrayer himself.

What else can be seen is the people's differing opinions and attitudes towards faith. This can be illustrated by a situation from Chronicles in which half of the Livonians deceived the then Bishop Meynard by promising to convert to Christianity if he would build them an Ikšķile castle, and after its completion most of them reneged on their promise and frustrated the bishop (Henricus de Lettis, 1982, p. 25). It shows how people were willing to pretend for their own benefit, and once the benefit was gained, they could forget their promises. However, one cannot be sure why they did not continue to pretend, as they could have had more buildings and improved their lives. A possible disadvantage in accepting the faith may have been that they had to go with the rest of the crusaders to conquer new lands, which may not have appealed to all the peaceful pagans who were not interested in raiding lands, and so they renounced the

faith. Regarding to adopting new religion there may have also been other commitments, of which, unfortunately, the chronicle does not give us any more clue.

A similar act of betrayal has occurred also later in the book when the priest Berthold ordered the Livonians to convert to Christianity but the Livonians refused, to which Berthold then decided to attack the Livonians situated on a small island in the middle of Riga, but was taken aback by the fact that he had forgot to bring his boats (Henricus de Lettis, 1982, p. 31). From this, we can conclude that the attacks were not fully planned and were often driven by emotion (e.g. considering forgotten boats), which begs the question of what the deeper motivation is for spreading Christianity and why such seriousness at the cost of human lives and time, when technically what we believe in does not change the outcome of life itself – the inevitable death. Also, if one does not want to embrace the faith, why force it, and not go back to a place where one can be with oneself and avoid the problems of religious difference that we see in many European countries today.

However, the books only importance doesn't lie only in the previously named factors, relationships and faith, as the book has greatly also facilitated learning about the overall Baltic history in the Middle Ages, when literate people were not to be found in great numbers, and printing had yet to be invented. As the text goes on we get more of an idea of the ethnographic differences between the tribes and paganism practises of the Baltic people, while slowly moving on to the book's main purpose, to show how people were actually Christianised by the eyes of the chronicles author and other eyewitnesses of the time, therefore giving us the information about the exchange and spread of religion in Eastern Europe. From this point of view, we can also get a great overview of the geopolitics of the time as we see the new systems of life being adopted as well as how the Baltic territories are divided and who comes to power where and for how long.

From today's perspective, the Chronicle of Livonian Henry has helped the Baltic states to create a somewhat summary of their history that may have been even more incomplete in the past, and it is also a good piece of evidence of the earliest devotion to paganism, which is a relevant practise in Baltics to this day, in addition to avoidance of all outward foreign things. This altogether has played a role in the formation of a national and religious identity of these countries, which still stays firm to their beliefs

and practises of their ancestors. To better understand the texts content, the following chapter of the work aims to find the best way to transcribe the text.

2.5. Transcription Methods

Since the text of the older manuscript from Tallinn Gymnasium, referred in corpus is worn and illegible in places, I will not use the mentioned document for the transcription test but will use the newer edition of Richard Kleis's book, which contains both the original text and the Estonian translation. Using the Liber primus of both versions, I will try to transcribe them using various methods and tools designed for the purpose. The test part of the following is to figure out the mean that will produce the most satisfactory result the quickest, without having to spend too much time on editing it. In order to not to make this sub-chapter too long, I will only include the first two paragraphs of the transcription results, and the rest can be found in the annexes 2-7. The transcribed texts will be highlighted in case of mistakes.

These three choices have been made not only because Transkribus, widely used by researchers, and Google Lens are widely used by ordinary users for transcribing but also because the three work in different ways. Namely, Google Lens works as an OCR (Optical Character Recognition) tool, which is mostly used to identify modern printed texts, and which mostly recognises all the most commonly used fonts. Transkribus, on the other hand, incorporates both OCR and HTR (Handwritten Text Recognition), being also more useful for identifying historical handwritten documents precisely because of its specially trained models. In the case of the third, manual transcription, we cannot speak of either OCR or HTR because the transcription is done by hand by a human. It is therefore generally the more time-consuming, but sometimes the only tool to use for more complex handwriting when the trained model is unable to recognise the letters. Since these sample texts are printed texts and not manuscripts, all three methods have equal chances of detecting the text, the only drawback being that we can take into account the time needed for manual transcription before the test.

2.5.1 Transkribus

As a first tool, I use Transkribus, which is currently one of the best-known tools for obtaining transcriptions of material in different languages and of different ages. However, this tool is not perfect, as there is not enough material for all languages to train the tool, but still, by testing different language modules, not much editing needed transcriptions can be obtained in some languages. The need for editing also depends on the age and difficulty of the alphabet system, as for the older text the model might have not yet enough training. The writing recognition might also depend on the personal handwriting of the author as some handwritings are more difficult to read and to be recognized than others.

2.5.1.1 Latin

In the case of the given Latin translation, the Noscemus GM 6 model proved to be the best one on the basis of three tests, and the result is as follows:

LIBER PRIMUS. DE LYVONIA

I. DE PRIMO EPISCOPO MEYNARDO. Divina providencia.memor Raab et Babilonis, videlicet confuse gentilitatis, nostris e modernis temporibus Livones ydolatras ab ydolatrie et peccat compno taliter igne qui amoris excitavit.

2. Fuit vir vite venerabilis et venerande canicieit. sacerdos ex ordine beati Augustini in cenobio Sigebergensi. Hic simpliciter pro Christo et predicandi tantum causa cum comitatu mercatorum Lyvoniam venit. Theutonici enim mercatores, Lyvonibus familiaritate confuncti. Lyvoniam frequenter navigio per Duno flumen adir solobant.[6]

2.5.1.2 Estonian

As the only Estonian module did not produce a readable result in the transcription, I tried the German Giant I model, knowing from previous experience that it is often quicker to get a readable result with the German models in the case of Estonian texts:

[6] Refer to Annex 2 for the full Liber Primus transcription.

ESIMEXE RAAMAT. LVAAs

DS Jumaa eenägeli hoolitsus!, pidades meeles Rahabit ja Paabelik, soe on eksiteel viibiwaid paganaid, on meie nüüdseil negadel äratanud ebajumalakummardajad livlased ebajumalateenistuse ja patu unest järgmisel viisil oma armastuse tulexa.

12) Segebergi kloostris oli austusväürse cluviisiga ja auväärse halli peagn mecs, preester ondsa Augustinuse ordust?. Ta tuli ühekaupmeeste selisiga Liivimaale lihtsalt Kristuse pärast ja ainult et jullustada. Sest Saksa kaupmehed, kes olid lüvlastegn söprussidemeis, lavalsesid sageli lacvadega Vaina jöxe määda Livimaal Käin.[7]

2.5.2 Google Lens

Another widely used and easily accessible transcription method for ordinary users is Google Lens, which, in addition to transcription, allows people to translate the text on top of images as well as search for images backwards on the web. This method has already proven to be more readable than the previous one, and the results in both languages are the following:

2.5.2.1 Latin

LIBER PRIMUS. DE LYVONIA

1. DE PRIMO EPISCOPO MEYNARDO. Divina providencia, memor Raab et Babilonis, videlicet confuse gentilitatis, nostris et modernis temporibus Livones ydolatras ab ydolatrie et peccati sompno taliter igne sui amoris excitavit.

2. Fuit vir vite venerabilis et venerande caniciei, sacerdos ex ordine beati Augustini in cenobio Sigebergensi. Hic simpliciter pro Christo et predicandi tantum causa cum comitatu mercatorum Lyvoniam venit. Theutonici enim mercatores, Lyvonibus familiari- tate coniuncti, Lyvoniam frequenter navigio per Dune flumen adire solebant.[8]

[7] Refer to Annex 3 for the full Liber Primus transcription.
[8] Refer to Annex 4 for the full Liber Primus transcription.

2.5.2.2 Estonian

ESIMENE RAAMAT. LIIVIMAAST

(1) ESIMESEST PIISKOPIST MEYNARDIST. Jumala ettenägelik hoolitsus, pidades meeles Rahabit ja Paabelit, see on eksiteel viibi- vaid paganaid, on meie nüüdseil aegadel äratanud ebajumalakum- mardajad liivlased ebajumalateenistuse ja patu unest järgmisel vii- sil oma armastuse tulega.

(2) Segebergi kloostris oli austusväärse eluviisiga ja auväärse halli peaga mees, preester õndsa Augustinuse ordust. Ta tuli ühe kaupmeeste seltsiga Liivimaale lihtsalt Kristuse pärast ja ainult et jutlustada. Sest Saksa kaupmehed, kes olid liivlastega sõprusside- meis, tavatsesid sageli laevadega Väina jõge mööda Liivimaal käia.[9]

2.5.3 Manual Transcription

As a third example, I add the errorless version of the transcriptions, made by just typing out the text manually.

2.5.3.1 Latin

LIBER PRIMUS. DE LYVONIA

1. DE PRIMO EPISCOPO MEYNARDO. Divina providencia, memor Raab et Babilonis, videlicet confuse gentilitatis, nostris et modernis temporibus Livones ydolatras ab ydolatrie et peccati sompno taliter igne sui amoris excitavit.

2. Fuit vir vite venerabilis et venerande canicei, sacerdos ex ordine beati Augustini in cenobio Sigebergensi. Hic simpliciter pro Christo et predicandi tantum causa cum comitatu mercatorum Lyvoniam venit. Theutonici enim mercatores, Lyvonibus familiaritate coniuncti, Lyvoniam frequenter navigio per Dune flumen adire solebant.[10]

[9] Refer to Annex 5 for the full Liber Primus transcription.
[10] Refer to Annex 6 for the full Liber Primus transcription.

2.5.3.2 Estonian

ESIMENE RAAMAT. LIIVIMAAST

1. ESIMESEST PIISKOPIST MEYNARDIST. Jumalik ettenägelik hoolitsus, pidades meeles Rahabit ja Paabelit, see on eksiteel viibivaid paganaid, on meie nüüdseil aegadel äratanud ebajumalakummardajaid liivlased ebajumalateenistuse ja patu unest järgmisel viisil oma armastuse tulega.

2. Segebergi kloostris oli austusväärse eluviisiga ja auväärse halli peaga mees, preester ündsa Augustiniuse ordust. Ta tuli ühe kaupmeeste seltsiga Liivimaale lihtsalt Kristuse pärast ja ainult et jutlustada. Sest Saksa kaupmehed, kes oli liivlastega sõprussidemeis, tavatsesid sageli laevadega Väina jõge mööda Liivimaal käia.[11]

If we compare Transkribus and Google Lens to manual transcription, we can see that Google Lens does the job more accurately, sometimes leaving only half spaces in the text. As a user experience, Google Lens is also easier and faster to use and you can use it just as an extension from your tab, howering a box over the text needing to be transcribed, meanwhile for Transkribus the user needs to log-in to its page and then upload files and wait some time until the text is transcribed. However, most of the mistakes are in the Transkribus transcription of the Estonian version of the text, where sometimes the word has been completely changed and may not be understood without prior knowledge. Therefore, I can conclude that it is useful to use Google Lens for printed texts, especially for languages for which Transkribus lacks a good quality module, but in any case, they need to be manually reviewed after the acquired transcription to avoid any appearing errors.

As the aim of this test was to find out the most efficient way of transcription, it deemed to be Google Lens. This tool has also been used to transcribe the Latin and Estonian full versions of Richard Kleis's book in order to provide textual material for subsequent data extracting chapters of this work. These transcriptions can be found in Annexes 8 and 9 respectively.

[11] Refer to Annex 7 for the full Liber Primus transcription.

3. The Textual Data, Its Analysis and Visualisation

K. Benoit (2020, p. 463) has defined the word "data" as information that has been collected for particular use. Therefore, it does not mean that we should collect all the possible information out of the text, but that we should make a selection of what is most important in a particular piece of text for our research topic. By his words, a text becomes a source of data when we decide to store it for reference or analysis, and this is always accompanied by a process of extra-textual structuration, as without structure, the text would simply remain an informative source, but it would not provide a form of data (Benoit, 2020, p. 463). That being said, the data can vary greatly, because as many as there are texts, there are also as many sources of data. All this data can be used in textual analysis, a learning method used to study messages used in different kinds of mediums such as newspapers, documents, webpages and so forth (Smith, 2017, p. 1), leaving us a large variety of source possibilities for studying different kind of textual material. Textual analysis involves several facets and can be divided mainly into two categories. Firstly, qualitative, which is described as an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytical rules and step by step models, without rash quantification (Mayring, 2000), and secondly, quantitative, which can be used to answer the questions about occurring thematic, semantic relations among the occurring thematic and network positions or relations occupied by these themes (Roberts, 2000, p. 270).

As researchers and data workers in different fields often accumulate huge amounts of data in the course of their work, which is difficult to process without tools, we will mostly use in this work the quantitative method. Therefore, as we have already determined the best text transcription tool and extracted the necessary texts, we have built the necessary base for analysis. The following step in this case is data extraction an in-depth text analysis. By focusing on the manuscript and its translations in this work, I want to test and highlight different tools that would be useful for researchers in the digital humanities field, using both already known and newer tools. To this end, I have divided the following chapter into several parts and created various mini studies and tests of different and possible larger projects in the field of DH.

In the first part of the chapter I will examine word frequencies, starting with Voyant Tools to find differences and similarities in word forms between Richard Kleis's Latin and Estonian versions of the text. Then I will continue with the same tool to gather data about tribes and their land mention frequencies using their both full transcriptions to see which tribes and lands in total were most mentioned throughout the text. As a second part of word frequencies tests, I will use Python, with different assisted AI tools. Firstly, by gathering the counts of all the listed personal names with the code curated with the help of ChatGBT and secondly, finding the Latin place name frequencies using the help of a second AI tool Cursor. The latter part of the tests focuses on the comparative word analysis of the three Estonian translations, which are first being transcribed with Google Lens and then manually reviewed. Then I will use Python with assisted AI tool Grok to find in separate sub-chapters the unique and common words between them.

3.1. Word Frequencies

There are many different reasons to study word frequencies, such as to get an idea of the most common words and word usage in a text, which can be used to identify the author of a text by comparing his or her sentence structure and word usage with, for example, other works. Similarly, by looking at the most common words, we can identify the overall theme of the text and examine the use and number of specific word forms. There are many more ways to do this, but mainly word frequencies are collected to gather textual data, as part of or to illustrate a larger project.

In this chapter, I will experiment with different tools and methods that can be used to collect and visualise textual data in various ways. Therefore, below you can see the experiments and results both using the Voyant Tools program and code experiments using the Python programming language.

3.1.1 Voyant Tools

As the first tool, I use Voyant Tools, which is a free and widely known platform used for textual analysis by scholars. Its simplicity, various analytical features and a multitude of visualisation possibilities make it a useful tool for various needs, giving the user straightforwardly the possibility to visualize the data entered which we will explore in this chapter.

3.1.1.1 Word Forms and Correlations

In this sub-chapter, I will use Voyant Tools to take a closer look to the Latin and Estonian versions of the text presented in the Richard Kleis's book. The purpose of using the application is to find out what different kind of information can we collect out of these two texts. The main questions are on how many different word forms in total with different meanings are in the Liber Primus original text and translation and how many words are seemingly correlated to each other, meaning how many times the most common words in the translation are used in both texts.

In order to reveal this, I am using Voyant Tools to create word clouds for both versions with 25 and 50 most common words. We can then take a closer look at the table 4 to see the 25 most common words in both languages and find their correspondences, which are brought out in the table 5. To see the transcriptions of the Liber Primus in Latin refer to the annex 6 and for the transcription in Estonian refer to annex 7.

To create a cirrus one must upload the text file and select cirrus (yellow number 1) on the left top side of the screen. Then to adjust the number of words needed (yellow number 2), one has to simply slide the Terms bar under the cirrus image itself:

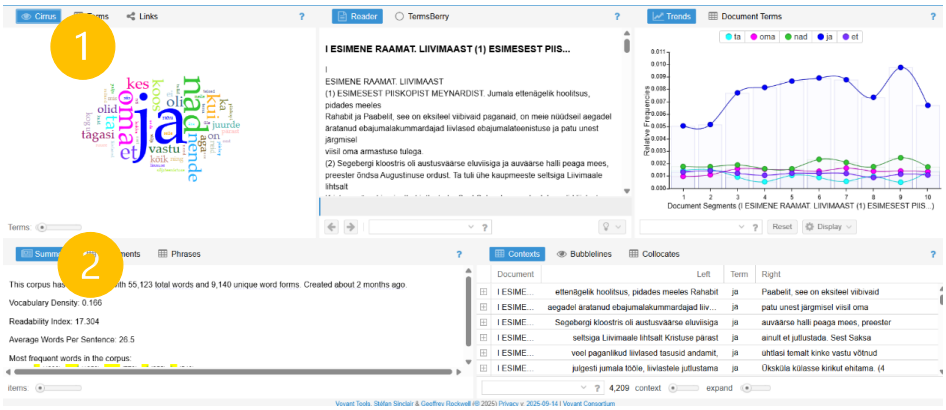


Figure 6. The Creation of Cirrus

Followingly, I bring out the word clouds Voyant Tools created:



Figure 7. The VT Latin version, 25 words



Figure 8. The VT Latin version, 50 words

In the figure 7. We can see the 25 most common Latin words of the corpus and on the figure 8. 50 most common words. In total there was 987 words and 691 unique word forms, which means that 961 words appeared without any repetition. Voyant Tools shows also the vocabulary density of 0.700 and readability index of 19.298. It also notes that the average word count per sentence is 20.6 and that the five most common words were *vite* (5); *episcopus* (5); *meynardus* (4); *mercatorum* (4) and *lyvonum* (4).

Secondly, we do the same analysis with the Estonian translation:



Figure 9. The VT Estonian version, 25 words



Figure 10. The VT Estonian version, 50 words

In the figure 9. We can see the 25 most common Estonian words of the corpus and on the figure 10. 50 most common words. In total there was 1124 words and 722 unique word forms. The shown vocabulary density is 0.642 and readability index is 17.494. The average word count per sentence is 22.9 and the five most common words were *ja* (54); *ta* (23); *et* (21); *nad* (17); *kui* (17).

These 5 words: *ja* (and); *ta* (he/she); *et* (to); *nad* (they); *kui* (if) are all considered as stop words which means I have to get rid of them and do a second test to get more accurate result. To not run into this problem again I took out the following words:

- *ja* - and
- *kui* - if
- *et* - to
- *nad* - they
- *on* - are
- *ta*- he/she
- *sest* - because
- *ei* – no/negation

The second test excluding the stop words shows that the 5 most frequent words in the corpus are *vastu* (10); *vend* (8); *tagasi* (7); *liivlased* (7) and *pärast* (6). In this instance the included words also show different word clouds:



Figure 11. The VT Estonian version, 25 words



Figure 12. The VT Estonian version, 50 words

With the gathered words from Voyant Tool I take 25 most common from both languages and create a table to see if the most used words are mainly the same or if we can see words with rather different meanings. For that I translate all the terms in English and give the cases they are presented in if necessary. The lists with 50 most common words are supplementary added in the annex 10 and annex 11, to avoid excessive word count for this analysis.

Term EST	**Count**		**Term LAT**	**Count**	
vastu	10	against	vite	5	vine-branch (ablative)
vend	8	brother	episcopus	5	bishop
tagasi	7	back	meynardus	4	Meynard
liivlased	7	Livonians	mercatorum	4	merchant (genitive pl)
pärast	6	later	lyvonum	4	Livonias (genitive)
kes	6	who	lyvonibus	4	with Livonians (ablative)
võtnud	5	Taken	lyvones	4	Livonians

ülalnimetatud	5	above mentioned	frater	4	brother
usu	5	the belief (genitive)	fidem	4	chord (accusative)
siis	5	then	episcopum	4	bishop (accusative)
see	5	this/that	castro	4	castle (dative)
seda	5	this/that (partitive)	theodericum	3	Theoderic
saanud	5	have become	terram	3	land (accusative)
piiskop	5	bishop	primus	3	the first
nende	5	theirs	pedem	3	foot (accusative)
maha	5	down	pater	3	father
ette	5	in front	fratrem	3	brother (accusative)
aga	5	but	equi	3	horse (genitive)
võtavad	4	they are taking	episcopo	3	bishop (dative/ablative)
tuleb	4	comes	diem	3	day (accusative)
teda	4	him/her	consilio	3	advice (dative)
mis	4	what/which	baptismum	3	baptism (accusative)
maalt	4	from land	accepta	3	welcome
linnuse	4	the castle (genitive)	ykescolam	2	Ykesküla (accusative)
kuid	4	however	villa	2	country house

Table 3. The Common Words on VT

Examining the table, we see that there are certain words in Estonian which are used fairly often, for example *vastu* (10) and *vend* (8), whereas in addition to two mentions *vite* (5) and *episcopus* (5), most Latin words are used only 3-4 times in the Liber Primus. It is also noticeable that most of the words in the top 25 most common words

appear fairly different from the counter language. However, there are 5 words that are more frequent throughout the first book. Put in nominative singular; *vend* (brother), *liivlane* (Livonian), *piiskop* (bishop), *maa* (land) and *linnus* (castle), these words in different forms make up a big part of the text.

1.vend	8	brother	fratrem	3	brother (accusative)
			frater	4	brother
2.liivlased	7	Livonians	lyvones	4	Livonians
			lyvonum	4	Livonias (genitive sg)
			lyvonibus	4	with Livonians (ablative)
3.piiskop	5	bishop	episcopus	5	bishop
			episcopum	4	bishop (accusative)
			episcopo	3	bishop (dative/ablative)
4.maalt	4	from land	terram	3	land (accusative)
5.linnuse	4	the castle (genitive)	castro	4	castle (dative)

Table 4. The Most Common Words on VT

Although many of the most commonly used words differ in the two versions, there are always words that must unintentionally appear in both versions in order to convey the text in its original form. These words do not conclude us just a small overview of the first book but rather give an idea of the overall theme of the chronicle as these words can be well used to summarize the key points of it. In these two versions, there are seemingly five more prominent common words between the two versions (ref. table 5.). But to highlight also the differences between the texts, we should pay attention to the different word forms in them. In total there are 691 different word forms in the Latin version of Liber Primus and 722 in the Estonian version. The differences in word forms between the two versions are obviously due to the differences between the languages and the more complex grammar of Estonian, adding a large number of different word forms.

3.1.1.2 Tribe and Land Frequency

To make the tribe and their land mention frequency table in Voyant tools I first need the full texts in Estonian and Latin and also a list of tribes and their lands mentioned in the book in Estonian and in Latin languages, as well as them translated in English for comparison. For that I will read the text and list out the most prominent tribes of the Baltic area. Having the text files I will upload them one test at a time to the Voyant Tools and when the summary window with lists open, I will click on the terms button on the top left corner marked with number 1:

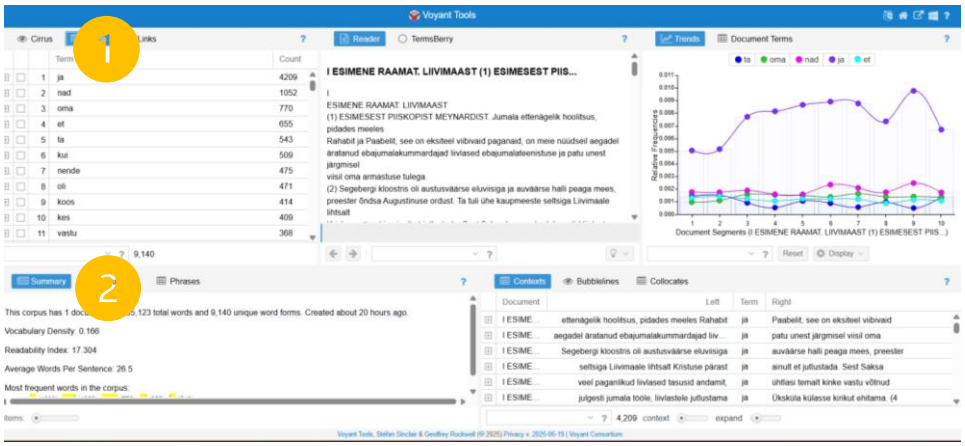


Figure 13. The Voyant Tools for Frequency

Then to find all the necessary tribes from the list I use the search bar next to the number 2 on image which will give me all possible words and their counts, which start with the letters I enter. As a result, the more letters I enter the more specific the results get. To get the most accurate result the fastest I will start entering all tribe and land names in the search bar by words first three to four letters as this already will cancel out almost all the other words with similar first characters. When finished adding all the versions for the tribe and land names the user has to click on the small question mark near the word count and export the current data as tab separated values.

Therefore, to start this test I will first bring out all tribe and land names mentioned in all languages:

Estonian names	Latin names	English names
Eestlased/Eesti	Estones/Estonia	Estonians/Estonia
Sakalased/Sakala	Saccalanenses/Saccalia	Saccalians/Sakala
Ugalased/Ugala	Ugaunenses/Ugandia	Ugandians/Ugandi
Virulased/Virumaa	Vironenses/Vironia	Vironians/Virumaa
Saarlased/Saaremaa	Osilienses/Osilia	Oeselians/Saaremaa
Liivlased/Liivimaa	Livones/Lyvones/Livonia	Livonians/Livonia
Latgalid/Latgalite maa	Letthigalli/Lettonia	Latgalians/Latgale
Semgalid/Semgalite maa	Semigallos/Semigallia	Semgallians/Semgalia
Seelid/Seelide maa	Selones/Selonia	Selonians/Selonia
Kuralased/Kuramaa	Curones/Curonia	Curonians/Courland
Järvalased/Järvamaa	Gerwanenses/Gerwania	Jervians/Järva county
Riialased/Riia	Rigenses/Riga	Rigans/Riga
Võndlased/Võnnu	Wendes/Wendia	Wends/Wendland
Leedulased/Leedu	Lethones/Lethonia	Lithuanians/Lithuania
Preislased/Preisimaa	Prusces/Prussia	Prussians/Prussia
Turaidalased/Turaida	Thoreydenses/Thoreida	Turaidans/Turaida
Idumealased/Idumea	Ydumei/Ydumea	Idumeans/Idumea

Table 5. The Tribe Names

The following are the result for each tribe and land mention in Estonian after filtering all the possible results out from Voyant Tools:

liivlased	132	sakala	20	võndlaste	8	turaidalaste	3

liivlaste	101	eestlastega	20	ugandis	8	semgaleid	3
liivimaa	99	semgalite	18	semgalitega	8	seelide	3
liivimaale	88	semgalid	18	eestimaal	8	sakalast	3
riiga	83	riias	18	turaidast	7	saarlastega	3
riia	72	kuralased	17	turaidalased	7	saaremaal	3
eestlased	68	virumaale	16	riialastega	7	leedumaa	3
riialased	56	järvamaale	16	järvalaste	7	leedulastest	3
riialaste	49	riialastele	15	idumealaste	7	kuralastele	3
eestlaste	46	liivlastele	15	saarlasi	6	järvalastele	3
eestimaa	46	eestlasi	15	leedumaale	6	järvalasi	3
leedulaste	44	virumaa	14	leedulasi	6	järva	3
leedulased	42	turaida	13	võndlastega	5	võnnule	2
ugandisse	37	sakalaste	12	ugandist	5	võndlasi	2
saarlased	35	saaremaa	12	ugandi	5	virumaalt	2
liivlastega	28	liivimaalt	12	sakalasi	5	virulastega	2
liivlasi	27	virulased	11	leedulastele	5	virulaste	2
liivimaal	26	saaremaale	11	võnnus	4	ugandit	2
turaidasse	23	võnnu	10	ugalaste	4	turaidalastele	2
sakalasse	23	sakalas	10	ugalasi	4	semgalitel	2
sakalased	23	leedulastega	10	saarlastele	4	seelidele	2
ugalased	22	järvalased	10	järvamaa	4	seele	2

saarlaste	21	eestlastele	10	võndu	3	sakalat	2
eestimaale	21	riiast	9	ugalastele	3	sakalastele	2
võnnust	20	kuralaste	9	turaidas	3		

Table 6. The Tribe and Land Mentions in Estonian

The following are the result for each tribe and their land mention in Latin:

lyvoniam	121	lyvonensem	15	vironie	5	semigallia	2
rigam	93	gerwanenses	15	letthi	5	selonibus	2
lyvonibus	84	semigallis	14	lethti	5	letthigalliam	2
lyvonum	74	letonum	14	leththos	5	lethonia	2
rigenses	72	letonibus	14	lethonibus	5	gerwanensium	2
lettis	69	curones	14	selones	4	gerwanensis	2
letti	64	rigensi	13	rige	4	gerwanensem	2
lyvonia	51	thoredenses	12	lettones	4	wendi	1
lettorum	50	semigalli	12	lethoniam	4	wendeculla	1
rigensibus	45	osiliensium	11	curonum	4	prusciam	1
riga	42	thoreydam	10	wendos	3	letthum	1
wenden	39	lyvonensi	10	vironia	3	letthos	1
osilienses	26	curonibus	10	thoredensibus	3	letthorum	1
lettos	24	semigallos	8	semigallie	3	letthonibus	1

letones	24	semigalliam	8	selonum	3	letthigalli	1
rigensium	23	wendis	7	lettonum	3	letthia	1
lethones	22	vironenses	7	lettiam	3	letos	1
lyvonensis	21	thoreyda	7	letthis	3	lethos	1
vironiam	19	rigensem	7	letoniam	3	lethorum	1
gerwam	19	osilianos	7	gerwen	3	gerwinus	1
thoreidam	17	gerwanensibus	7	gerwa	3	gerwanensi	1
semigallorum	17	wendorum	6	curoniam	3	curonie	1
lyvonie	17	thoreida	6	wendam	2		
lethonum	17	osiliensibus	6	vironensium	2		

Table 7. The Tribe Names and Mentions in Latin

As a result of this test, taking into account both languages, we see that the most mentioned tribes with their lands are Livonians, Rigans, Estonians, Latvians and Osilians. Contrary, the tribes and their lands who got the least mentions are Prussians, Idumeans, Selonians, Jervians and Vironians. This test was an effective method to analyse the test subjects' various forms and their quantity in relation to others which could be done without an extended knowledge of any programming language, using a specialized tool.

3.1.2 Python with Assisted AI

In this subsection, I will use the Python programming language to find out which personal and place names were mentioned most in the book. In order to give the code enough textual basis, I will use both the Estonian and Latin versions of Richard Kleis's book, which can be found in Annex 8 and 9. To get a list of all personal names and

place names mentioned, I need to go to the end of the relevant book where lists of personal and place names are compiled, which I can use to count the needed words in the text.

To make the coding process efficient, I will from now on start incorporating the most known modern AI coding tools such as ChatGBT and Cursor, which are nowadays increasingly used across various languages to simplify and fasten coding. These tools are particularly useful in digital humanities projects, where the repetitive and sometimes complicated coding work could be automated. In order to test and use the AI tools in this particular piece of code efficiently, it is important to begin the coding process with a well formulated prompt that clearly defines the task. The AI-generated code then serves as a code base, which typically requires further adjustment to meet the specific needs of the task and ensure it functions as intended.

3.1.2.1 Personal Names with Python and ChatGBT

Even though there are several case endings in Estonian and Latin, we do not take them into account while writing this code and only try to count the names that are given in the nominative form in the text, to get as accurate a result as possible due to the complicity of inflection of names in Estonian. This is because it is often difficult to distinguish Estonian inflectional endings from the root word, especially programmatically, when you need to find a large amount of test words for the code to cover all the possibilities. The aim of this exercise is therefore to retrieve the names in the list in the form in which they appear in the list. Although it may happen that the code also counts a word with an inflectional ending as a nominative. This can happen when the inflectional ending resembles a particle or when the nominative for of the word can naturally incorporate such an ending. However, this method may still fail for words where inflection involves major changes to the word stem and not just the ending of the word.

For this task, I used the list of names mentioned in the book, which is found in the Richard Kleis's version on the pages 275-281. Due to the large amount of names, I also made some minor restrictions to reduce the number of results. To do this, I took away the place names behind the personal names, so that the names of persons with the same first name could be counted under the same name, including the personal

number behind the name, e.g. Otto IV becomes simply Otto. I also left out names where it is mentioned that it is a family name e.g. the Bekeshov family, therefore only counting peoples first names in purpose of this test.

In the following section, I present the ChatGBT generated Python script with the edits of the work's author to extract unique names in Estonian (ChatGPT, personal communication, June 23, 2025). This task will have my actional comments in between the lines of code to explain the steps and functioning of it. To get the code I first inserted the following prompt to ChatGBT command bar:

"Create me a Python script that reads a text file and counts how many times each name from a certain list appears in the text. Only the names that exactly match this list should be counted. For a result, print the names in alphabetical order with their frequency counts next to them."

Then using the Visual Studio Code code editor, I adjusted the result as needed for it to fulfil the task correctly:

```
# Import the re (regular expressions) module for word extraction and the Counter
from the collection module for counting the words from the text file.

import re

from collections import Counter

# Define the locations of the source text file and the file containing all the
character names, needed for counting.

def count_known_names(file_path, name_list):

# Open the source text file in utf-8 encoding, which handles the special characters
(õ,ä,ö,ü) found in Estonian language. Then turn the whole text into a single string
in the text variable.

    with open(file_path, 'r', encoding='utf-8') as f:

        text = f.read()

# Convert the whole text file and list of names into lowercase for easier
comparison between the words.

    text = text.lower()

    name_list = [name.lower() for name in name_list]

# Set the word boundaries in place by adding \b and \b' to both sides of the word
as well as \w+ to avoid extra characters that might come in the end of the word.
This is particularly useful to avoid words with unnecessary case-endings which
otherwise might be counted in as different words while making a list.

    words = re.findall(r'\b\w+\b', text)

# Create a Counter object to count specific words from the list. It puts aside and
counts the words from the source text file which are found in the name list file
and then adds numerical count value after them.

    counts = Counter(word for word in words if word in name_list)
```

```
# Send the result back to name_counts variable.

    return counts

# Make the script run directly as it is not part of a module.

if __name__ == "__main__":

# Add the list of Estonian names found in the end of the book to define the list of
character names in nominative case which need to be found from the source text and
be brought back with their counts on the side.

    name_list = [

"Absalon", "Adolf", "Ako", "Albert", "Albrecht", "Alder", "Alebrand", "Alexander",
"Aleydis", "Alo", "Andras", "Andreas", "Anno", "Arnoldus", "Asso", "Augustinus",
"Berengaria", "Bernhard", "Bertold", "Birger", "Bodo", "Borchard", "Burchard",
"Caupo", "Coelestinus", "Cono", "Conrad", "Constatin", "Dabrel", "Daniel",
"Daugeruthe", "David", "Dote", "Drivinalde", "Drunwald", "Eggelbert", "Engelbert",
"Everhard", "Eylard", "Florencius", "Fredehelmus", "Frederic",
"Friedrich", "Gandulfinus", "Gayle", "Gerceslawe", "Gerhard", "Gerwin",
"Geverhard", "Godescale", "Godfrid", "Gregorius", "Harbert", "Hardeknud",
"Hartwic", "Hartwig", "Hebb", "Heinric", "Helmold", "Helyas", "Henric", "Henrik",
"Hermann", "Hildebrand", "Honorius", "Innocentius", "Isaakios", "Isfrid", "johann",
"Johannes", "Jordan", "Karl", "Kiideon", "Knud", "Kulewene", "Kyrian", "Kyriawan",
"Lambert", "Layan", "Lembevalde", "Lembitu", "Ludolf", "Ludovic", "Made",
"Maniwalde", "Maria", "Marquard", "Martin", "Mauritius", "Meluke", "Meme",
"Meynard", "Misteslawe", "Modena", "Mysteslawe", "Namesis", "Nicolaus", "Ninnus",
"Olaus", "Ostrad", "Otto", "Bernard", "Paike", "Petrus", "Philippus", "Pribislav",
"Rabodo", "Rainald", "Rameko", "Roger", "Robert", "Roboam", "Rodolf", "Rothmar",
"Russin", "Salomon", "Segehard", "Siegfried", "Sifrid", "Stecse", "Stephanus",
"Suelgate", "Taavet", "Tabellinus", "Thalibald", "Theoderic", "Heinrich",
"Uldenago", "Uldewene", "Unnepewe", "Augustin", "Wade", "Waldeko", "Valdemar",
"Wane", "Wardeke", "Waremar", "Waribule", "Waridote", "Warigribbe", "Veko", "Wenno",
"Vercingetorix", "Wescelin", "Vesike", "Wichmann", "Wickbert", "Viesthard",
"Viewald", "Vietzo", "Viliendi", "Vissewalde", "Wizzlaus", "Vjatško", "Vladimir",
"Woldemar", "Volchard", "Volquin", "wolter", "Wolther", "Wottele", "Wulfstan",
"Ylo", "Ymant", "Ymaut", "Yso"

]

# Set the text file's path as "fornames.txt" which is the source text needed to find
the previously listed words.

file_path = "fornames.txt"

# Process the source text using the list of names and return the count of listed
names in nominative case.

    name_counts = count_known_names(file_path, name_list)

# Print the text "Counts of names found in text:" in front of the results to indicate
the purpose of the following result.

    print("Counts of names found in text:")

# To get the final count printed on the screen, use count to loop through all of the
names on the list again in lowercase. Then each name will be returned with their
counts, if it has no count, it will be returned with a number 0 behind them.

    for name in name_list:

        count = name_counts.get(name.lower(), 0)

# Lastly, print the results in the nominative case with their frequency counts aside.

        print(f"{name}: {count}")
```

The output of the code put in table format to visualize all the names with their counts separately:

Absalon: 0	Cono: 1	Godescale: 1	Knud: 0	Ninnus: 2	Suelgate: 2	Wichmann: 1
Adolf: 1	Conrad: 3	Godfrid: 3	Kulewene: 1	Olaus: 0	Taavet: 0	Wickbert: 0
Ako: 3	Constatin: 0	Gregorius: 0	Kyrian: 1	Ostrad: 0	Tabellinus: 0	Viesthard: 2
Albert: 22	Dabrel: 3	Harbert: 0	Kyriawan: 1	Otto: 4	Thalibald: 1	Viewald: 1
Albrecht: 0	Daniel: 2	Hardeknud: 0	Lambert: 0	Bernard: 7	Theoderic: 22	Vietzo: 1
Alder: 1	Daugeruthe: 0	Hartwic: 2	Layan: 1	Paike: 2	Heinrich: 0	Viliendi: 1
Alebrand: 9	David: 0	Hartwig: 0	Lembevalde: 0	Petrus: 6	Uldenago: 1	Vissewalde: 2
Alexander: 2	Dote: 2	Hebb: 0	Lembitu: 7	Philippus: 0	Uldewene: 2	Wizzlaus: 1
Alo: 1	Drivinalde: 1	Heinric: 5	Ludolf: 0	Pribislav: 0	Unnepewe: 1	Vjatško: 0
Andras: 0	Drunwald: 0	Helmold: 2	Ludovic: 0	Rabodo: 1	Augustin: 0	Vladimir: 0
Andreas: 2	Eggelbert: 2	Helyas: 1	Made: 1	Rainald: 0	Wade: 1	Woldemar: 10
Anno: 2	Engelbert: 1	Henric: 6	Maniwalde: 1	Rameko: 5	Waldeko: 1	Volchard: 0
Arnold: 5	Everhard: 1	Henrik: 0	Maria: 0	Roger: 0	Valdemar: 0	Volquin: 12
Asso: 1	Eylard: 1	Hermann: 3	Marquard: 2	Robert: 0	Wane: 1	wolter: 1
Augustinus: 0	Florencius: 0	Hildebrand: 0	Martin: 1	Roboam: 1	Wardeke: 1	Wottele: 1
Berengaria: 0	Fredehelmus: 0	Honorius: 0	Mauritius: 1	Rodolf: 9	Waremar: 0	Wulfstan: 0
Bernhard: 0	Frederic: 1	Innocentius: 2	Meluke: 2	Rothmar: 1	Waribule: 1	Ylo: 1
Bertold: 19	Friedrich: 0	Isaakios: 0	Meme: 1	Russin: 12	Waridote: 3	Ymant: 0
Birger: 0	Gandulfinus: 0	Isfrid: 1	Meynard: 10	Salomon: 1	Warigribbe: 2	Ymaut: 1
Bodo: 2	Gayle: 1	johann: 0	Misteslawe: 2	Segehard: 1	Veko: 2	Yso: 2
Borchard: 1	Gerceslawe: 1	Johannes: 13	Modena: 0	Siegfried: 0	Wenno: 1	
Burchard: 1	Gerhard: 0	Jordan: 3	Mysteslawe: 1	Sifrid: 1	Vercingetorix: 0	

Caupo: 22	Gerwin: 1	Karl: 0	Namesis: 0	Stecse: 3	Wescelin: 0	
Coelestinus: 0	Geverhard: 0	Kiideon: 0	Nicolaus: 2	Stephanus: 1	Vesike: 5	

Table 8. The Counted Personal Names in Estonian

We see from the output that the 5 most used personal names in Estonian were Albert (22), Theoderic (22), Caupo (22), Bertold (19) and Johannes (13). The result of the counted names with previous program in Estonian is the following, totalling to the presented counts:

Count 0: 35 names	Count 7: 2 names
Count 1: 39 names	Count 9: 2 names
Count 2: 22 names	Count 10: 2 names
Count 3: 6 names	Count 12: 2 names
Count 4: 1 name	Count 13: 1 name
Count 5: 5 names	Count 19: 1 name
Count 6: 2 names	Count 22: 3 names

Table 9. The Count Amounts in Estonian

By the table we see that the highest count for the names was 1, followed by 0 and 2. The 0 count must come from the names that were actually not in the text but on the side notes, still included in the list and were not taken out for the part of this test to showcase also a count of 0.

To get the results with the Latin text I will use the same code base but will have to change the text file name to fornames2.txt, which contains the Latin version of the text. After that I need to also switch out the Estonian list of names to the names in Latin language:

```
"Absolon", "Adolphus", "Ako", "Alabrandus","Albertus", "Alderus", "Alexander",
"Alo", "Andreas", "Anno", "Arnoldus", "Asso", "Augustinus", "Berengaria",
"Bernardus", "Bertoldus", "Birger", "Bodo", "Borchardus", "Burcgravius", "Canutus",
"Carolus", "Caupo", "Coelestinus", "Cono", "Conradus", "Constatinus", "Dabrelus",
"Danielus", "Daugeruthe", "David", "Dote", "Drivinalde", "Drunwaldis",
"Engelbertus", "Everhardus", "Eylardus", "Florencius", "Fredehelmus", "Fredericus",
"Gayle", "Gedeon", "Gerceslawe", "Gerhardus", "Gerweder", "Gerwinus",
"Geverhardus", "Godescalus", "Godfridus", "Gregorius", "Harbertus", "Hartwicus",
"Hebbus", "Helmoldus", "Helyas", "Heinricus", "Henricus", "Hermannus", "Herodes",
"Honorius", "Innocentius", "Ioahnnes", "Isfridus", "Kulewene", "Kyrianus",
"Kyriawanus", "Lambertus", "Layanus", "Lembewalde", "Lembitu", "Ludolfus",
"Ludovicus", "Made", "Maniwalde", "Marquardus", "Martinus", "Mauritius", "Meluke",
"Meme", "Meynardus", "Mislawe", "Misteslawe", "Nicolaus", "Ninnus", "Nogardie",
"Ostradus", "Otto", "Paike", "Petrus", "Philippus", "Rabodo", "Rameko", "Robertus",
"Roboam", "Rodolfus", "Rothmarus", "Russinus", "Salomo", "Segehardus",
"Segehardus", "Siffridus", "Stecse", "Stephanus", "Suelgate", "Tabelinus",
"Thalibaldus", "Theodericus", "Uldenago", "Uldewene", "Unnepewe", "Wade", "Wane",
"Wardeke", "Waremarus", "Waribule", "Waridote", "Warigribbe", "Veko", "Wenno",
"Wescelinus", "Vesike", "Vesthardus", "Wichmannus", "Wickbertus", "Viesceka",
"Vietzo", "Viewaldus", "Wigboldus", "Viliendi", "Wolter", "Vissewalde", "Wizzlaus",
"Volchardus", "Woldemarus", "Wolterus", "Volquinus", "Wottele", "Vytamas", "Ylo",
"Ymaut", "Yso"
```

Following is the resulted output of the code for the Latin text put in table format to visualize all the names separately:

Absolon: 0	Carolus: 0	Gerceslawe: 1	Kulewene: 1	Nogardie: 15	Thalibaldus: 1	Viewaldus: 1
Adolphus: 0	Caupo: 13	Gerhardus: 0	Kyrianus: 0	Ostradus: 0	Theodericus: 20	Wigboldus: 1
Ako: 2	Coelestinus: 0	Gerweder: 1	Kyriawanus: 1	Otto: 3	Uldenago: 1	Viliendi: 1
Alabrandus: 2	Cono: 1	Gerwinus: 1	Lambertus: 0	Paike: 2	Uldewene: 2	Wolter: 0
Albertus: 22	Conradus: 3	Geverhardus: 0	Layanus: 1	Petrus: 6	Unnepewe: 1	Vissewalde: 2
Alderus: 1	Constatinus: 0	Godescalus: 0	Lembewalde: 1	Philippus: 7	Wade: 1	Wizzlaus: 1
Alexander: 2	Dabrelus: 3	Godfridus: 3	Lembitu: 2	Rabodo: 1	Wane: 1	Volchardus: 0

Alo: 0	Danielus: 0	Gregorius: 0	Ludolfus: 0	Rameko: 5	Wardeke: 1	Woldemarus: 10
Andreas: 2	Daugeruthe: 1	Harbertus: 0	Ludovicus: 0	Robertus: 0	Waremarus: 0	Wolterus: 1
Anno: 55	David: 3	Hartwicus: 2	Made: 1	Roboam: 2	Waribule: 1	Volquinus: 12
Arnoldus: 5	Dote: 2	Hebbus: 0	Maniwalde: 1	Rodolfus: 9	Waridote: 3	Wottele: 1
Asso: 1	Drivinalde: 1	Helmoldus: 2	Marquardus: 2	Rothmarus: 1	Warigribbe: 2	Vytamas: 1
Augustinus: 0	Drunwaldis: 0	Helyas: 1	Martinus: 1	Russinus: 10	Veko: 2	Ylo: 1
Berengaria: 0	Engelbertus: 1	Heinricus: 2	Mauritius: 1	Salomo: 0	Wenno: 0	Ymaut: 1
Bernardus: 8	Everhardus: 1	Henricus: 5	Meluke: 2	Segehardus: 1	Wescelinus: 0	Yso: 2
Bertoldus: 19	Eylardus: 1	Hermannus: 4	Meme: 1	Segehardus: 1	Vesike: 5	
Birger: 0	Florencius: 0	Herodes: 0	Meynardus: 10	Siffridus: 1	Vesthardus: 4	
Bodo: 2	Fredehelmus: 1	Honorius: 0	Mislawe: 1	Stecse: 3	Wichmannus: 1	
Borchardus: 1	Fredericus: 1	Innocentius: 0	Misteslawe: 2	Stephanus: 0	Wickbertus: 1	
Burcgravius: 0	Gayle: 1	Ioahnnes: 0	Nicolaus: 2	Suelgate: 1	Viesceka: 3	
Canutus: 0	Gedeon: 0	Isfridus: 1	Ninnus: 2	Tabelinus: 0	Vietzo: 1	

Table 10. The Counted Personal Names in Latin

In this case the top 5 names were Anno (55), Albertus (22), Theodericus (20), Bertoldus (19) ja Nogardie (15). Though, we must consider that Anno in this case is not just a personal name but also has a separate meaning which we can not extract in this text. Comparing to the same word's result in Estonian (2) it is highly unlikely that the (55) in Latin version is used for the personal name version instead of the meaning year. That results us to believe that the first place, similarly to previous should be taken by Albertus and the fifth place would go to Caupo (13).

The total of the counted names in Latin is the following:

Count 0: 35 names	Count 8: 1 names
Count 1: 47 names	Count 9: 1 names
Count 2: 22 names	Count 10: 3 names
Count 3: 7 names	Count 12: 1 names
Count 4: 1 names	Count 15: 1 names
Count 5: 3 names	Count 19: 1 names
Count 6: 2 names	Count 22: 1 names
Count 7: 1 names	Count 55: 1 names

Table 11. The Count Amounts in Latin

We see that the highest count goes again to 1 and 0, followed by 2, as with the previous names.

The following table combines both Estonian and Latin count tables, illustrating the difference in counts between the two languages. This is also to show how Latin grammar, instead of having a large number of cases, has prepositions, which might make the actual noun part of the word to keep their initial nominative form without any suffixes, therefore, sometimes making the count of noun looking word forms higher:

Estonian	**Latin**
Count 0: 35 names	Count 0: 35 names
Count 1: 39 names	Count 1: 47 names
Count 2: 22 names	Count 2: 22 names
Count 3: 6 names	Count 3: 7 names

Count 4: 1 name	Count 4: 1 name
Count 5: 5 names	Count 5: 3 names
Count 6: 2 names	Count 6: 2 names
Count 7: 2 names	Count 7: 1 name
Count 9: 2 names	Count 8: 1 name
Count 10: 2 names	Count 9: 1 name
Count 12: 2 names	Count 10: 3 names
Count 13: 1 name	Count 12: 1 name
Count 19: 1 name	Count 15: 1 name
Count 22: 3 names	Count 19: 1 name
	Count 22: 1 name
	Count 55: 1 name

Table 12. The Combined Counts

The combined tables indicate that even if in some cases, such as count 0, 2, 4 and 6, the results are the same, there are still rather varying occurrences of the words, which could be the cause of previously mentioned case differences, not so accurate word-to-word translation, or some other more technical factors. The prime examples for this is the word Anno, which in Estonian version has 2 matches but in Latin 55. This is not a mistake but a cause of the word meaning Anno itself, which in Latin text is not just considered a personal name but also signifies the word “year”, commonly used in this text.

3.1.2.3 Latin Place Names Frequency with Python and Cursor AI

In this subsection, I will use AI tool Cursor to compile Python code to read the frequency of place names in the Latin text of a given work. The collected data is used to create a heatmap with Kepler, which is visualized in chapter 1. As in the previous sub-chapter, the place names are found from the end of the Richard Kleis book from the pages 288-290. The following list contains all the names, which will be entered in the code, but I will make the code sort out 30 most frequently named places for mapping:

```
"Adia", "Agelinde", "Aldenborch", "Alimannia", "Aliste", "Alpes", "Anehalt", "Annonis villa", "Appelderin", "Asscrade", "Astigerwe", "Autine", "Avispe", "Babilon", "Beverin", "Brema", "Caput Ursi", "Carethen","Cauponis castrum", "Cella", "Cogelse", "Coiva", "Colonia", "Cozzo", "Cubbesele", "Culdale", "Curonia", "Dabrelis castrum", "Dacia", "Damiata", "Darbete", "Dasle", "Duna", "Dunemunde", "Egyptus", "Estonia", "Galacia", "Gercike", "Gerwa", "Gothlandia", "Hagenowe", "Halverstad", "Hamersleve", "Haniale", "Harien", "Harpenstede", "Holme", "Homborch", "Iericho", "Ierusalem", "Igeteveri", "Ingaria", "Iogentagania", "Iolgesim", "Kettis", "Kukenoys", "Kywa", "Ladise", "Leal", "Ledegore", "Lembiti villa", "Lenewarde", "Leole", "Letonia", "Letthia", "Letthigallia", "lippia", "Listria", "Lone", "Loppegunde", "Lovecotte", "Lowenborch", "Lubeca", "Lucum", "Lucum", "Lundia", "Lunebroch", "Lyndanise", "Lyvonia", "Magdeburgum", "Novum Monasterium", "Nurmegunde", "Odenpe", "Osilia", "Letthia", "Letthigallia", "Owele", "Paderborna", "Lippia", "Listria", "Lone", "Loppegunde", "Lovecotte", "Lowenborch", "Lubeca", "Lueum", "Lundia", "Luneborch", "Lyndanise", "Lyvonia", "Magdeburgum", "Maianpata", "Maritimae provinciae", "Mater Aquarum", "Memeculle", "Mesiothe", "Metimne castrum", "Metsepole", "Meyiendorpe", "Missa", "Mocha", "Mone", "Mons Antiquus", "Mutina", "Narva", "Nogardia", "Novum Monasterium", "Nurmegunde", "Odenpe", "Osilia", "Owele", "Paderborna", "Pachalle", "Pala", "Peremunt", "Plescekowe", "Plesse", "Ploceke", "Portus novus", "Pruscia", "Pudiviru", "Puidise", "Purke", "Raab", "Raceburgum", "Raigele", "Rama", "Rastegerwe", "Raupa", "Reineveri", "Revele", "Riga", "Riole", "Rodopoyse", "Roma", "Ropa", "Rosula", "Rotalia", "Rucia", "Rumbula", "Saccala", "Sadegerve", "Saletsa", "Samlandia", "Sattesele", "Saxonia", "Scheta", "Sehusen", "Selonum castrum", "Selonum portus", "Semigallia", "Segeberg", "Sladem", "Smalenceke", "Somelinde", "Sontagana", "Sotecle", "Stotele", "Stumpenhusen", "Suecia", "Sunde", "Susdalia", "Sydegunde", "Sygewalde", "Tarbata", "Tarwanpe", "Thervetene", "Theutonia", "Tholowa", "Thoreyda", "Thysenhusen", "Tremonia", "Tricatua", "Turme", "Ugaunia", "Ungaria", "Urele", "Waiga", "Waldia", "Walgatalwe", "Warbola", "Wasala", "Vechta", "Wendeculla", "Wenden", "Wentlande", "Verden", "Veronia", "Westfalia", "Wetpole", "Viliende", "Winda", "Vinlandia", "Vironia",
```

```
"Vitisele", "Wogene", "Woreegerwe", "Vredeland", "Wysby", "Yborch", "Ydumea",
"Ykeseola", "Ykewalda", "Ymera", "Ymmeculle", "Ysenborch"
```

The prompt made for Cursor:

"Create me a Python script to find word frequencies of a certain list of words from another text file and then return the top 30 most frequently used words from it. The code needs to take into account that the text is in Latin, and the language has case-endings."

The code generated by Cursor, edited and commented by the work's author for sorting out the most frequent names is the following (Cursor, personal communication, June 27, 2025):

```
# Import the necessary modules re (regular expressions), the Counter to count the
name occurrences, os to check the existence of the input file and unicodedata which
removes diacritics from the letters to make them more easily readable by the program.

import re

from collections import Counter

import os

import unicodedata

# Add the pre-created list of Latin place names and their lemmas separated by commas
to facilitate the finding of correct words with different case endings.

latin_name_list = [

      ("Adia", "adi"), ("Agelinde", "agelind"), ("Aldenborch", "aldenborch"),
("Alimania", "alimani"),

    ("Aliste", "alist"), ("Alpes", "alp"), ("Anehalt", "anehalt"),

    ("Appelderin", "appelder"), ("Asscrade", "asscrad"), ("Astigerwe", "astigerw"),
("Autine", "autin"),

    ("Avispe", "avisp"), ("Babilon", "babilon"), ("Beverin", "beverin"), ("Brema",
"brem"),

    ("Caput Ursi", "caput urs"), ("Carethen", "careth"),

      ("Cella", "cell"), ("Cogelse", "cogels"), ("Coywa", "coyw"), ("Colonia",
"coloni"),

   ("Cozzo", "cozz"), ("Cubbesele", "cubbresel"), ("Culdale", "culdal"), ("Curonia",
"curoni"), ("Dacia", "daci"), ("Damiata", "damiat"), ("Darbete", "darbet"),

    ("Dasle", "dasl"), ("Duna", "dun"), ("Duna", "duna"),

      ("Dunemunde", "dunemund"), ("Egyptus", "egypt"), ("Estonia", "estoni"),
("Estonia", "eston"),

    ("Galacia", "galaci"), ("Gercike", "gercik"), ("Gerwa", "gerw"), ("Gothlandia",
"gothlandi"),

       ("Hagenowe", "hagenow"), ("Halverstad", "halverstad"), ("Hamersleve",
"hamerslev"),
```

```
     ("Haniale", "hanial"), ("Harien", "hari"), ("Harpenstede", "harpensted"),
("Holme", "holm"),

     ("Homborch", "homborch"), ("Iericho", "ierich"), ("Ierosolim", "ierosol"),
("Igeteveri", "igatever"),

    ("Ingaria", "ingari"), ("Iogentagania", "iogentagani"), ("Iolgesim", "iolges"),
("Kettis", "kett"),

    ("Kukenoys", "kukenoy"), ("Kywa", "kyw"), ("Ladise", "ladis"), ("Leal", "leal"),

    ("Ledegore", "ledegor"), ("Lenewarde", "leneward"),

   ("Leole", "leol"), ("Letonia", "letoni"), ("Letthia", "letthi"), ("Letthigallia",
"letthigalli"),

     ("Lippia", "lippi"), ("Listria", "listri"), ("Lone", "lon"), ("Loppegunde",
"loppegund"),

    ("Lovecotte", "lovecott"), ("Lowenborch", "lowenborch"), ("Lubeca", "lubec"),
("Lucum", "luc"),

     ("Lundia", "lundi"), ("Luneborch", "luneborch"), ("Lyndanise", "lyndanis"),
("Lyvonia", "lyvoni"),

    ("Magdeburch", "magdeburch"), ("Nurmegunde", "nurmegund"),

     ("Odenpe", "odenp"), ("Osilia", "osili"), ("Owele", "owel"), ("Paderborna",
"paderborn"),

       ("Pachalle", "pachall"), ("Pala", "pal"), ("Peremunt", "peremunt"),
("Plescekowe", "plescekow"),

    ("Plesse", "pless"), ("Ploceke", "plocek"), ("Pruscia", "prusci"),

     ("Pudiviru", "pudivir"), ("Puidise", "puidis"), ("Purke", "purk"), ("Raab",
"raab"),

       ("Raceburgum", "raceburg"), ("Raigele", "raigel"), ("Rama", "ram"),
("Rastegerwe", "rastegerw"),

     ("Raupa", "raup"), ("Reineveri", "reinever"), ("Revele", "revel"), ("Riga",
"rig"),

    ("Riole", "riol"), ("Rodopoyse", "rodopoys"), ("Roma", "rom"), ("Ropa", "rop"),

     ("Rosula", "rosul"), ("Rotalia", "rotali"), ("Rucia", "ruci"), ("Rumbula",
"rumbul"),

      ("Saccala", "saccal"), ("Sadegerwe", "sadegerw"), ("Saletsa", "salets"),
("Samlandia", "samlandi"),

      ("Sattesele", "sattesel"), ("Saxonia", "saxoni"), ("Scheta", "schet"),
("Sehusen", "sehus"),

    ("Semigallia", "semigalli"),

     ("Segeberg", "segeberg"), ("Sladem", "slad"), ("Smalenceke", "smalencek"),
("Somelinde", "somelind"),

      ("Sontagana", "sontagan"), ("Sotecle", "sotecl"), ("Stotele", "stotel"),
("Stumpenhusen", "stumpenhus"),

    ("Suecia", "sueci"), ("Sunde", "sund"), ("Susdalia", "susdali"), ("Sydegunde",
"sydegund"),

     ("Sygewalde", "sygewald"), ("Tarbata", "tarbat"), ("Tarwanpe", "tarwanp"),
("Thervetene", "therveten"),

     ("Theutonia", "theutoni"), ("Tholowa", "tholow"), ("Thoreyda", "thoreyd"),
("Thysenhusen", "thysenhus"),
```

```
    ("Tremonia", "tremoni"), ("Tricatua", "tricatu"), ("Turme", "turm"), ("Ugaunia",
"ugauni"),

    ("Ungaria", "ungari"), ("Urele", "urel"), ("Waiga", "waig"), ("Wenden", "wend"),
("Waldia", "waldi"),

     ("Walgatabalwe", "walgatabalw"), ("Warbola", "warbol"), ("Wasala", "wasal"),
("vechta", "vecht"),

     ("Wendeculla", "wendecull"), ("Wenden", "wend"), ("Wentlande", "wentland"),
("Verden", "verd"),

      ("Veronia", "veroni"), ("Westfalia", "westfali"), ("Wetpole", "wetpol"),
("Viliende", "viliend"),

    ("Winda", "wind"), ("Vinlandia", "vinlandi"), ("Vironia", "vironi"),

     ("Wogene", "wogen"), ("Worcegerwe", "worcegerw"), ("Vredeland", "vredeland"),
("Wysby", "wysb"),

    ("Yborch", "yborch"), ("Ydumea", "ydume"), ("Ykescola", "ykescol"), ("Ykewalda",
"ykewald"),

    ("Ymera", "ymer"), ("Ymmeculle", "ymmecull"), ("Ysenborch", "ysenborch")

]

# Add all Latin case endings by declension, also with diacritics to avoid words being
mistakenly left out.

case_endings = [

    # 1st declension singular and plural

    "a", "ae", "am", "ā", "as", "arum", "ārum", "is", "ī", "ās", "īs",

    # 2nd declension singular and plural

    "um", "i", "o", "us", "a", "orum", "is", "īs", "er", "ō", "ōrum", "ōs"

    # 3rd declension singular and plural

    "is", "em", "e", "i", "es", "ium", "ibus", "ī", "a", "ia", "sē",

    # 4th declension singular and plural

    "u", "ui", "us", "uum", "ūs", "uī", "ū", "ua"

    # 5th declension singular and plural

    "es", "ei", "em", "erum", "ērum", "ēbus", "ēī", "ēs"

    # Extra endings

    "n", ""

]

# Print the number of entries in the list. Then check the names and their lemmas are
both on the list. In case something is missing or incorrect it will raise an error.

print(f"Length of latin_name_list: {len(latin_name_list)}")

for name, lemma in latin_name_list:

    if not (isinstance(name, str) and isinstance(lemma, str)):

        raise ValueError(f"Invalid entry in latin_name_list: ({name}, {lemma})")

# Normalize text by removing the diacritics found in Latin language and convert the
text in to lowercase.

def normalize_text(text):
```

```
        text = ''.join(c for c in unicodedata.normalize('NFD', text) if
unicodedata.category(c) != 'Mn')

    return text.lower()

# Build regex patterns (sequences of characters to match the patterns) for each name
on the list.

def build_name_patterns(names_with_lemmas, endings):

# Create empty list to store names with their lemmas and define the adjective
suffixes.

    patterns = []

    adjective_suffixes = ["anus", "ensis", "icus"]

# Loop through all names with their lemmas.

    for name, lemma in names_with_lemmas:

# Normalize names and lemmas by removing diacritics and then splitting them both
into a list of words.

        name_normalized = normalize_text(name)

        lemma_normalized = normalize_text(lemma)

        name_words = name_normalized.split()

        lemma_words = lemma_normalized.split()

# Check if there are names which contain more words than 1 and apply the endings
only to the last word's lemma.

        if len(name_words) > 1:

            pattern_parts = [re.escape(word) for word in name_words[:-1]]

            last_lemma = lemma_words[-1]

# Create a pattern for endings which are not adjective endings, making sure that
special characters do not interrupt the pattern and that the endings are joined and
wrapped in a group. Lastly, make sure that any adjective endings are not being taken.

             noun_ending_pattern = "(" + "|".join(re.escape(ending) for ending in
endings if ending not in adjective_suffixes) + ")?"

# Create a pattern for endings which are listed in adjective_suffixes or which begin
with any of the strings in adjective_suffixes, making sure that special characters
do not interrupt the pattern and that the endings are joined and wrapped in a group.

             adj_ending_pattern = "(" + "|".join(re.escape(ending) for ending in
endings if ending in adjective_suffixes or any(ending.startswith(s) for s in
adjective_suffixes)) + ")?"

# Add the regex pattern to the last words lemma.

            pattern_parts.append(f"{re.escape(last_lemma)}({noun_ending_pattern}|{a
dj_ending_pattern})")

# Combine names with more than 1 word into a single regex-pattern.

            pattern = rf"\b{' '.join(pattern_parts)}\b"

# Create a group for words with noun and adjective case endings.

        else:

             noun_ending_pattern = "(" + "|".join(re.escape(ending) for ending in
endings if ending not in adjective_suffixes) + ")?"
```

```
            adj_ending_pattern = "(" + "|".join(re.escape(ending) for ending in endings if ending in adjective_suffixes or any(ending.startswith(s) for s in adjective_suffixes)) + ")?"

                                                                    pattern = rf"\b({re.escape(lemma_normalized)}{noun_ending_pattern}|{re.escape(lemma_normalized)}{adj_ending_pattern}|{re.escape(name_normalized)})\b"

# Secure the case insensitive matching for words.

        patterns.append((name, re.compile(pattern, re.IGNORECASE)))

# Print a regex pattern of two words, which were used for debugging.

        if name in ["Estonia", "Duna"]:

            print(f"Generated pattern for '{name}' (lemma: {lemma}): {pattern}")

# Return the compiled patterns.

    return patterns

# Take the file, names, lemmas and word endings and start to count all the possibilities. If the file path not found raise an error.

def count_latin_names_in_file(file_path, names_with_lemmas, endings):

    if not os.path.isfile(file_path):

        raise FileNotFoundError(f"File not found: {file_path}")

# Set the text variable to none as the text is not read yet.

    text = None

# Specify the encodings of the text.

    encodings = ["utf-8", "latin1", "cp1252"]

# Try to read the file in all listed encodings until the first one succeeds or they all fail. Print a message in case of error or success.

    for encoding in encodings:

        try:

            with open(file_path, "r", encoding=encoding) as f:

                text = f.read()

              print(f"Successfully read file with {encoding}: {file_path} (length: {len(text)} characters)")

            print(f"Sample text (first 100 chars): {text[:100]}")

                        print(f"Normalized sample text (first 100 chars): {normalize_text(text[:100])}")

            break

        except Exception as e:

            print(f"Error reading file with {encoding} encoding '{file_path}': {e}")

# Raise an error if none of the encodings worked.

    if text is None:

        raise IOError(f"Failed to read file '{file_path}' with any encoding")

# Normalize the text.

    text = normalize_text(text)
```

```
# Create a new set to add there unique names with their lemmas and to get rid of
their duplicates.

    seen = set()

    unique_names_with_lemmas = []

    for name, lemma in names_with_lemmas:

        if name not in seen:

            seen.add(name)

            unique_names_with_lemmas.append((name, lemma))

# Create regex patterns for each name to match them with endings and then store the
counts of each word.

    patterns = build_name_patterns(unique_names_with_lemmas, endings)

    name_counts = Counter()

# Go through all possible patterns and find the possible matches in the text and
then count them.

    for name, pattern in patterns:

        matches = list(pattern.finditer(text))

        count = len(matches)

        name_counts[name] += count

# If the count is bigger than 0 it will print the count and name and all the case
endings that suited for the particular word on the list.

        if count > 0:

            matched_forms = [match.group(0) for match in matches]

           print(f"Found {count} matches for '{name}' with pattern {pattern.pattern}:
{', '.join(matched_forms)}")

# Find the two specific word’s noun and adjective forms to test and debug them in
the text if they did not work out in the first tests.

        if name in ["Estonia", "Duna"]:

            test_forms = []

            for lemma in [l[1] for l in names_with_lemmas if l[0] == name]:

                test_forms.extend([f"{normalize_text(lemma)}{ending}" for ending in
endings if ending not in ["anus", "ensis", "icus"]])

                for adj_suffix in ["anus", "ensis", "icus"]:

                  test_forms.extend([f"{normalize_text(lemma)}{adj_suffix}{ending}"
for ending in ["", "a", "um", "i", "o", "ae", "as", "is", "orum"]])

            test_forms.append(normalize_text(name))

# Test each ending for the two test words and print their test endings with their
occurrences.

            for form in test_forms:

                form_pattern = rf"\b{re.escape(form)}\b"

                form_matches = list(re.finditer(form_pattern, text, re.IGNORECASE))

                if form_matches:
```

```
                print(f"Test match for '{name}' form '{form}': {len(form_matches)}
occurrences")

# If no matches were found for the words from the text, print error message.

    if not name_counts:

         print("No matches found for any names. Check lemmas, case endings, text
formatting, or file content.")

# Create a list of the name and lemma combinations from the Counter and sort them by
count and then alphabetically in descending order.

    result = [(name, count) for name, count in name_counts.items()]

    result.sort(key=lambda x: (-x[1], x[0].lower()))

# Return the result.

    return result

# Find the top 30 most frequently mentioned names with their lemmas from the file
and return them with their counts aside.

def get_top_names(file_path, names_with_lemmas, endings, top_n=30):

    return count_latin_names_in_file(file_path, names_with_lemmas, endings)[:top_n]

# Ensure the code is running only if directly executed.

if __name__ == "__main__":

# Specify the text file where the names are taken from for the task.

     file_path = r"c:\Users\amher\OneDrive\Pictures\class2023\Master Thesis\3.2.2
Python\fornames2.txt"

# Execute the program by printing first the “Starting name counting process…”, then
returning and printing the 30 most mentioned place names with their Latin noun
endings, adjective endings and passive forms as well their counts for each of them.
If names were not found, print the “No names found in the text.” message.

    try:

        print("Starting name counting process...")

           top_30_names = get_top_names(file_path, latin_name_list, case_endings,
top_n=30)

          print("\nTop 30 most mentioned place names (with Latin case endings,
adjectives, and passive forms):")

        if top_30_names:

            for name, count in top_30_names:

                print(f"{name}: {count}")

        else:

            print("No names found in the text.")

# Print all names and counts again for debugging. In case of any errors, it will
print an error message: f"Error processing names: {e}”.

        print("\nAll names with counts (for debugging):")

             all_counts = count_latin_names_in_file(file_path, latin_name_list,
case_endings)

        for name, count in all_counts:

            print(f"{name}: {count}")
```

```
    except Exception as e:
        print(f"Error processing names: {e}")
```

The result of the 30 most common words:

Lyvonia: 189	Ugaunia: 51	Ymera: 27	Dunemunde: 19	Beverin: 16	Pala: 12
Riga: 138	Dacia: 34	Ykescola: 26	Plescekowe: 18	Gothlandia: 16	Rotalia: 11
Duna: 77	Saccala: 33	Semigallia: 25	Revele: 17	Ydumea: 16	Saxonia: 11
Estonia: 70	Osilia: 28	Holme: 24	Thoreyda: 17	Kukenoys: 14	Sontagana: 10
Wenden: 55	Vironia: 27	Gerwa: 22	Viliende: 17	Gercike: 12	Ploceke: 9

Table 13. The 30 Most Mentioned Latin Place Names

According to the table we can see that, as expected, the most used Latin word for a placename in the book is Lyvonia and the second and third place are taken by Riga and Duna. Though, to make this code run more accurately I had to exclude some place names from the list, for example Caupo linnus/Caupo castle, as it consists of multiple words and also contains a personal name. The code reads all words separately, meaning that the word Caupo could also be mixed up with the character Caupo in the text. Furthermore, I had to extract often the word maa/country and küla/village as they were counted separately, and it would have altered the results. Consequently, the best method with this particular code was to extract all the precision words from the actual name carrying words.

3.2 Comparative Word Analysis of the Three Translations

In this section I use Python to find the unique words and common words between the three Estonian translations of Livonian Henrys Chronicle, using the Liber Primus's of each book. Firstly, I will create transcriptions of all three Liber Primus's of the books

with the aid of Google Lens which is followed by manual review. After that, section by section I will create codes for both of the unique and common word tasks with the help of AI tool Grok and utilize them for all of the three translations. In the end I will also visualize the comparison results.

The three different translations used in this part are all connected as they are in Estonian, but what separates them is the time they were made and somewhat also their purpose. As the first Estonian version Jung had nothing to compare his work to yet but considering the time of its publication and translation, we can see that he has purposely tried to make the readers more knowledgeable about their history and national identity. The second version of Kleis was already more accurate and closer to Latin version having also commentaries and explanations to words and terms. Kleis with his third translation has made a parallel translation which is a useful way of giving an overview of historical material. He has also commented the text which makes it easier for scholars and regular readers to understand the context and visualize the atmosphere of the time.

3.2.1 Jaan Jung's Translations Transcription

Jaan Jung alias Munk was an Estonian translator, teacher and historian who was born and deceased in Imavere (Livonia) around 18.11.1835-26.06.1900 (ISIK, Jung, 2004). In his lifetime he has composed a number of books such as *About the ancient religion, customs and stories of the Estonian people* (*Eesti rahwa wanast usust, kombedest ja juttudest*), *The Livonian Duke Kaupo, and the Wars of His Days*, as well as *The Livonian People and Their Disappearance in This Land* (*Liiwlaste würst Kaupo, ja sõdimised tema päewil, kui ka Liiwi rahwast ja nende kadumisest siin maal*) and *The Livonian King Magnus and the Russian Tsar Joann Wassiljewitsh IV, or, a piece of the history of the Russia and Baltic lands from 1530 to 1584*. (*Liiwimaa kuningas Magnus ja Wene Zaar Joann Wassiljewitsh IV, ehk, tükike Wene- ja Läänemere maade ajalugust aastast 1530 kunni 1584*). From these examples we can see that he mainly preferred to write about the history of the area he was living in, which surrounded him, and about the topics he knew well. The following will show us the transcription of the Liber Primus of Henry's Livonian Chronicle translated by Jaan Jung:

I. Päätük.

Esimese piiskopi Meinhardi lugu.

Kuida Meinhard Liivlaste hulgas õpetas ja ristis.

§1. Jumalik hoolekandmine, kes Raabi ja Baabiloni, see on eksinud paganate pääle mõtleb , on meie praegustel aegul ebajumala teenijaid Liivlasi võera jumala teenisuse ja patu unest järgmisel viisil oma armastuse tulega ülesse äratanud.

§2. Seegebergi kloostris oli üks auusa elu kombete ja auuwäärt halli juustega mees kes püha Augustini ordu preester oli. See tuli Kristuse ja tema sõna kuulutuste pärast kaupmeestega ühes Liiwi maale. Sest Saksa kaupmehed, kes liivlastega sõbrad olivad, täisivad sagedaste oma lavadega lühikest aega tagasi Düüna jõge mööda Liiwi maal võersil.

§3. Kui nüüd ees nimetatud preester Bolotski kuninga Voldemari käest. Kellele Liivlased oma pagana usu ajal veel maksu maksivad, luba ja kingitusi oli saanud, hakkas ta julgeste Jumala tööd pääle Liivlastele armuõpetust kuulutades ja ehitas ühe kiriku Ükskülа külasse.

§4. Sellest külast saivad kõige esiti Iilo, Kulewene isa ja Viiso, Ualo isa ristitatut, kellele teised järele tuliwad.

§5. Järel tulewal talvel hävitasivad Littawilased Liiwilaste maa ära ja wiisivad wäga palju inimesi wangi. Nende wiha eest taganes preeseter Meinhard oma Ükskülа rahwaga ära ja juhtus metsades waenliku Littawilastega sõdima. Kui Littawilased jälle tagasi läksivad, näitis enne nimetatut Meinhard Liiwilastele nende rumalust, et neil mitte kindlaid tantsisi ei olnud ega neid ka saada ei tahtnud. Viimaks tõotas tema neile, et nemad kindlad kantsid pidiwad saama, kui nad Jumala lapsiks tahawad saada ja jääda. Jumalikul ajamisel wõeti see pakkumine wastu, ja lubati ja tõotati wandega, et nemad ristmist wastu wõtavawad.

§6. Selle järel toodi järgmisel suvel Gootlandist kõikisugu meistrid ja kiviraijujaid seie. Selle wahel sai tõsine usu wastuwõtmine Liivlaste poolt teistkorda kinnitatut. Enne ütskülа tantsi ehituse halatust lastis üks jagu rahvast ennast ristida, ja kui tants walmis olla – nõnda tõotati, ehk küll walega – tahta kõik endid ristida lasta. Nõnda tõusevad müürid oma põhjuste pääl ülesse. Viies jagu kantsi jäi preestri Meinhardi päralt, sest et see tema kuli pääl ülesse ehitati ja nõnda tema oma oli, kuna ta ka kiriku

aseme neilt hakatuses välja oli lunastanud. Kui kants wiimaks walmis sai, taganesiwad kes ristitud, tagasi ja ke suueste sündimata, ei wõtnud enam ristiusku wastu. Ommeti ei jätnud Meinhard omas ettewõttes järele.

Sellesammal ajal olivad Semgalid, naabri paganad, sellest kiwi ehitusest kuulnud, aga mitte tääbnud, et kibid lubjaga ühte kinnitatakse, siis tuliwad nad suurte laewa köitega ja tahtsiwad omas rumaluses kantsi Düüna jõkke wedada. Nemad saivad aga kiwi küttidest haavatut ja läksivad kahjuga jälle oma teed.

§7. Naabred Holmi rahwas petsiwad ees nimetatut Meinhardi niisamma suguste tõotustega, ja et neile ka kants ehitati, siis saivad nad kawaluse läbi hääd kasu. Kuus neist laskiwad endid hakatses, kes tääb mis nõuu pääle, ristida, kelle nimed olivad Viliendi, Uidenago, Waade, Waldeko, Gerweder ja Wiiso.

§8. Nende kahe ennenimetatut kantsi ehituse wahe ajal, Ükskülas ja Holmis, sai Meinhard Breemi pääpiiskopi Hartwigi poolest piiskopits säetut.

§9. Teise kantsi ehituse lõpetuse järel unustasiwad need üleannetud omad wanded ja waletasiwad isi endile, et mitte ühteainust ei olnud, kes ristiusku wastu oleks wõtnud. Sellepärast sai armuõpetuse kuulutaja hing kurvastatut, sest et nemad kui nad tema waranduse ära olivad riisunud ja tema peret rusikatega peksnud, ta teda ennast wiimaks aegapidi omalt maalt ära ajada tahtsiwad; ristmist, mida nemad wee sees oliwad saanud, arvasiwad nemad Düüna jões pesemise läbi enesest ära heita ja Saksa maale ära saata.

Theodorich Meinhardi abimees.

§10. Sellelsammal piiskopil oli üks kaastöötegija ewangeeliummit kuulutamas, wend Theodorich, Zisterzieni ordust, kes hiljemalt Eesti maal piiskop oli; teda tahtsiwad Toreida Liiwlased oma jumalatele ohwerdada, sest et wili tema põlli pääl paremini kaswis, ja nende wiljad liia wihma läbi ära ris´kutut saiwad. Rahwas sai kokku kutsutud ja liisu läbi jumalate tahtmine selle ohwri pärast tääda nõutut: üks oda pannakse maha, hobune astub edasi ja tõstab Jumala juhatuse järele elu jala üle oda. Wend palub suuga ja heidab käega risti. Täädmamees ütleb, et Kristlaste jumal hobuse selgas istuda ja säält hobuse jalga nõnda juhtida; sellepärast pidada hobuse selg ära pühitama, et jumal maha kukub. Nõnta sai tehtut, aga hobune tõstis jälle elu jala ette, nagu ennegi, siis sai wenna Theodorichile elu jäetut.

Seesamma wend, kui ta Eesti maale sai saadetut, on ühe päewa warjutuse

pärast, mis Jaani päewal on sündinud, paganate poolest mõndasugust häda pidand kannatama, ütelbes, et tema päikese ära süüa.

Sellesammal ajal palus üks Toreida Liiwlane, kes hhawatut oli, et wend Theodorid teda pidi parandama, tõotades, et kui ta terweks saab, ta ennast siis ristida laseb. Wend tampis aga rohtusi kokku, ilma nende rohtude wäge tundmata ja tääbmata, aga Jumala nime appi hüüdes, tegi ta teda ihu poolest, kui ka ristimise läbi hinge poolest terweks. See oli see esimene ülem, kes Toreidas kõige esiste risti usu wastu wõttis.

Niisamma kutsus ka üks haige wenda Theodorichi enese juure ja palus ennast ristida, aga tema naiste tige wastupanek keelis teda tema pühast ettewõttest. Kui aga haigus raskemaks läks, siis sai ka naiste umbusk ära wõidetut: tema sai ristitut ja palwetega Jumala hoolele antut. Kui ta ära oli surnud, olla üks usklik Liiwlane seitsme penikoorma kauguselt näinud ja ära tunnud, kuidas tema hing inglitest taewa oli kantut.

§11. Kui nüüd piiskop Meinhard Liiwlaste tuimsust nägi, et tema töö asjata oli, kogus ta waimulikud wendadega kokku ja läks kauba laewate juurde, kes pärast Lihawõte Gootlandi pidiwad sõitma ja tahtis nendega ära minna. Sellepärast kartsiwad Liiwlased ja arwasivad omas kawaluses, et siis Kristlaste wägi nende pääle jaaab tulema; sellepärast püüsiwad nemad eesnimetatut piiskoppi kül kavalusega ja silmaweega, ja kõigsesuguse salaliku meelega tagasi pidada, üteldes, nii kui ükskord püha Martinile ööldi, ehk kül mitte niisuguse meelega: ”Mitspärast jätab sa, isa, meid maha? Kelle hooleks jätab sa meid seie ilma abita? Lähäb ta üks karjane oma teed ja jätab omad kambad raske häda ja huntide kätte?” Ja Liiwlased lubasiwad jälle, et nemad ristiusku tõeste tahawad wastu wõtta See õiglane piiskop uskus kõiki nende sõnu ja pööris kaupmeeste nõi ja tõestuse pääle, et temale abiwäge saab tulema – Liiwlastega jäälle tagasi. Sest müned Sakslased kui ka Daanlased ja Normannid, ja mitme rahwaste mehed oliwad lubanud wäge tuua, kui tarwis on. Pärast kaupmeeste ärasõitu teretwad Holmi rawas tagsitulejat piiskoppi Juuda teretusega ja meelega, üteldes: ” Tere Rabi!” ja küsiwad, kui palju sool ja wammuse riie Gootlandis maksab. Sääl ei wõi ta kibeda südame walu pärast oma silmapisaraid enam pidada: ta läks Ükskülasse oma majasse ja säädis ühe päewa, rahwast kokku koguda ja nende lubadusi neile meele tuletada. Aga rahwas ei pannud seda päewa tähele ega täitnud ka oma tõotust. Sellepärast pidas ta omadega nõu, Eestimaale minna, et ta kaupmeestega, kes sääl ületäalwe oliwad, edasi Gootlandi pidi minema. Sellewahel säädsivad Liiwlased endid walmis, teda tee

pääl ära tappa; aga Toreida Liiwlane Anno keelab teda ja manitseb teda tagasi pöörata. Nõnda pööris ta mitmesuguse ehmatuse ja murega Ükskülasse tagasi, sest et ta siit maalt ära minna ei pääsenud.

Theodorichi teekond paawsti juurde. Katsmakäik Viru maal.

§12. Sellepärast saatis Meinhard salaja oma saadiku, wenna Theodorichi Toreidast, Rooma paawsti juurde nõu otsima. Kui see nägi, et ta taga kiusamise pärast siit maalt mitte wälja ei pääsnud, siis on ta waga kawaluse läbi Liiwlaste warisemised tühjaks teinud; ta sõitis ratsa hobuse seljas, preestri ehe ümber, raamat ja pühitsetut wesi käes, nagu tahaks ta müne haige juure minna. Et ta neile, kes tee pääl temale wastu tuliwad ja temalt küsisiwad, sedasamma oma teekonna asja ütles olewat, siis pääsis ta siit maalt wälja ja jüudis püha isa juurde. Kui paawst ristitut Liiwlaste aru kuulis oli tema selles nõuus, et neid mitte ei pea maha jäetama, waid tegi itsusejs, et nemad seda usku, mida nemad priitahtlikult wastu oliwad wõtnud, peaksiwad kinni pidama sunnitut saama. Ka lubad tema kõigile täielikku pattude andeksandmist, kes selle esimese koguduse äratuseks risti tähte wõtaksiwad ja sinna maale lähäksiwad.

§13. Juba sellel ajal oli seesamma piiskop ühe Rootsi herzogiga, Sakslastega ja Gootidega Ruurlaste wastu sõtta läinud; aga tormi läbi oliwad nad koguni Wiru maa randa aetut, mis üks Eesti maakond on, kus nemad kolm päewa paigal seiswad ja seda maad riisusiwad. Kuna nüüd Wirulased ristiusku wastuwõtte üle kauplesiwad, wõttis herzog ennemine nende käest maksu, tõmbas purjus ülesse ja läks Sakslaste pahanduseks oma teed.

§14. Sellewahel langes õnnis piiskop Meinhard mitme raske wawade ja walu järel haiguse woodi pääle, ja kui ta oma surmatunnikest ligi tundis jõudma, kutsus ta kõik Liiwi ja Toreida wanemad enese juure ja küsis, aks nemad pärast tema surma ilma piiskopita tahawad jääda. Nemad aga kinnitasiwad kõik, et nead ühte piiskoppi ja isa jälle endille rõõmuks soowiwad. Lühikest aega pärast seda lõpetas piiskop omad elupäewad.

3.2.2 Julius Mägiste's Translations Transcription

Julius Mägiste is a language scientist from Estonia, who lived in 19.12.1900-11.03.1978 (ISIK, Mägiste, 2004). He was the youngest teacher in the University of

Tartu at the time, and his preferred activity was etymology but also the research on Ingrian word shapes (Saar, 2015). The following is his version of translation of the Liber Primus:

I

Esimene raamat. Liivimaast.

1. Jumala ettenägelik hoolitsus äratas, nimelt segadusse sattunud Rahabi ning Paabeli rahvast meeles pidades, nõndaviisi meie omal ning uuel ajal oma armu tulega liivlased ebajumalate-kummarduse ning patu unest.

2. Segebergi kloostris oli auväärsete elukommetega ning aulikult hallpäine mees Meinhard, õndsa Augustinuse ordu preester. Ta läks lihtsalt Kristuse pärast ja üksnes jutlustamise sihiga kaupmeeste seltskonnas Liivimaale. Sest saksa kaupmeestel, kes olid sõprussidemeis liivlastega, oli kombeks laevaga Väinajõge mööda tihti Liivimaad külastada.

3. Nõnda siis asus mainitud preester, saanud loa Polotski vürstilt Vladimirilt, kellele liivlased, seesinase ajani alles paganlikud, tribuute maksid, ja ühtlasi saanud temalt kinke, julgesti jumalikule tööle, jutlustades liivlasile ning ehitades' kiriku Ükskülа asulas.

4. Seesinases külas ristiti kõige esmalt Kuulevene isa Ülo ning Alo isa Vietso, muude omakorda neile järgnedes.

5. Järgmisel talvel viisid leedulased, laastates Liivimaad, väga paljusid ära vangipõlve. Et nende metsikuse eest pääseda, otsis seesinane jutlustaja koos Ükskülа elanikega metsades varju. Pärast leedulaste tagasitõmbumist heitis see juba nimetatud Meinhard liivlasile ette rumalust, et neil ep olnud mingisuguseid kindlustusi. Ta tõotas, et neile ehitatakse kindlatused, kui nad nõuks võtavad ennast Jumala lasteks lugeda ning tema omad olla. See tehti otsuseks ning seda tõotati, ja ristimise vastuvõtmine leidis vandega kinnitust.

6. Nõnda siis toodi järgmisel suvel Ojamaalt kivitegijad kohale. Vahepääl leidis usu vastuvõtmise puhtasüdamelisus liivlasilt veel korda kinnitust. Enne Ükskülа linnuse ehituse algust ristiti osa rahvast ja pärast linnuse valmimist tõotas kogu rahvas ennast ristida lasta, tõsi küll petlikult. Nõnda siis kerkisid aluskividele müürid. Et viiendik linnusest kerkis jutlustaja kulul, siis sai see tema omanduseks, sest tema oli juba

alguses kiriku krundi ostnud. Kui linnus viimaseks, sest oli juba alguses kiriku krundi ostnud. Kui linnus viimselt oli valminud, taganesid ristitud usust, ning need, kes veel mitte ep olnud uuesti sündinud, tõrkusid usku vastu võtmast. Seesinane Meinhard ei taganenud ometi algatusest. Samal ajal tulid paganlikud naabrid semgalid, olles kuulda saanud kiviehitusest ning mitte teades, et kivid olid müürilubjaga kinnitatud, tugevate laevaköitega ning mõtlesid oma rumalast meelest linnuse Väinajõkke kiskuda. Aga nad lahkusid vibumeeste poolt haavatult ning kaotusi kandes.

7. Naabrid Holmist petsid eelnimetatud Meinhardi samasuguse tõotusega ja said oma salakavalusest enestele kasu seega, et ka neile linnus ehitati. Esialgselt lasksid kuus neist ennast – ükskõik mussiguse kavatsuseha – ristida, ja nende nimed olid Viljendi, Uldenago, Vaade, Valdeko, Gerveder, ja Vietso.

8. Nende kahe nimetatud linnuse ehitamise vaheajal pühitseti Meinhard Breemeni metropoliidilt piiskopiks

9. Aga pärast teise linnuse ehitamist murti ülekohtuselt unustatud tõotus, ja ep olnud ühtainsatki, kes oleksid usu vastu vütnud. Ep olnud ime, et jutlustaja meel sai rahutuks, iseäranis, kui nad pärast seda, kui nad ta vara olid üks ja teine kord riisunud ja teenreid rusikaga peksunud, mille nad olid vees vastu võtnud, enne pesemisega Väinjões kõrvaldada, saates selle tagasi Saksamaale.

10. Seesinasel piiskopil on evangeeliumi põllul kaastööliseks tsisterslase ordu vend Teodrich, pärastine Eestimaa piiskop, keda Toreida liivlased seepärast oma jumalaile kavatsesid ohverdada, et tema vili põldudel oli soodsam, aga nende vili vihmavee uputuses hävines. Rahvas kogunes, küsiti arbuga jumalate arvamist ohverduse kohta. Pandi oda maha, hobune astus sinna pääle, Jumala juhtimise kohaselt ta pani ette välja elama jätva jala. Vend palvetas suuga, õnnistas käega. Arbuja kinnitas, et kristlaste Jumal istuvat hobusel seljas ja juhtivat hobust jalga ette panema ning et seepärast on vaja üle hobuse selja pühkida, et Jumal maha kukuks. Kui seda oli tehtud ja hobune nagu ennegi elujala ette tõstis, jäi vend Teoderichile elu alles. Seesama vend kannatas, kui ta Eestimaale läkitati, päikesevarjutuse pärast, mis oli Ristija Johannese päeval, paganailt palju surmaohte, kes kinnitasid, et ta päikese ära õgivat. Samal ajal palus keegi haavatud Toreida liivlane vend Teoderichilt ravi, tõotades ennast ristida lasta, kui ta paraneb. Vend aga tampis puruks rohte, ilma et ometi oleks tundnud rohutaimede mõju, aga hüüdes Jumala nime poole ta parandas tema niihästi ihu kui hinge poolest,

ristides tema. Ja seesinane võttis kõige esmalt Toreidas ristiusu vastu. Veelgi keegi teine tõbine kutsus vend Teoderichi ja palus ristimist. Naiste häbematu põikpäisus takistas teda seda püha kavatsust täide viimast. Aga kui haigus raskenes, saadi naiselikust uskmattusest võitu, ta ristiti ja anti palvetega Jumala hoolde. Selle surija hinge nägi seitsme miili kaugusest keegi vastristitu inglite poolt taevasse viidavat ja tundis selle ära

11. Aga kui nimetatud piiskop oli näinud liivlaste kangekaelsust ja oma töö tühjaminemist, siis läks ta, olles kogunud vaimulikud ning vennad, koju tagasisõidu kavatsusega kaupmeeste laevade juurde, mis juba lihavõtte ajal pidid Ojamaale minema. Sellest sai liivlaste salakavalus hirmu ning kahtlustuse, et neid on ründama tulemas kristlaste sõjavägi, seepärast püüdsid nad kavalustega ja pisaratega ja mitmel muul viisil mainitud piiskoppi silmakirjalikult tagasi kutsuda, üteldes - nagu nood sääl kunagi pühale Martinile, muidugi mitte sama mõttega-: ”Isa, miks sa meid maha jätad? Või kellele sa jätad meid, mahajäetuid? Karjane annab ju oma lahkumisega omad lambad hädaohtlikult huntide kurkudele välja.” ja liivlased ise andsid uue tõotuse täielikult usku vastu võtta. Tema süütu uskus iga sõna ja pööris kaupmeeste nõuande pääle ning saades ühtlasi tulevikus saadetava sõjaväe kohta kinnituse koos liivlastega tagasi. Olid ju mõned sakslaste seast ja mõnikad taanlased, norralased ning mõned üksi kuist muudest rahvast lubanud, kui vaja on, sõjaväge tuua. Pärast kaupmeeste lahkumist tervitasid holmlased tagasitulevat piskoppi Juudase tervitussõnadega ning vaimus, pajatades ”Tere, rabi!” ja pärisid, missuguse hinnaga saab Ojamaalt osta soola või vatmanit. Südamekibedus ei peletanud tal pisaraid, ta läks üle Ükskülasse ning tuli tagasi oma kotta. Ta määras päeva, millal rahvas kokku kutsuda, et neile tõotust meelde tuletada. Nad ei pidanud tähtpäeva, ei täitnud tõotust. Seepärast otsustas ta, olles omadega nõu pidanud, minna Eestimaale, et ta koos nende kaupmeestega, kes sääl talvitasid, võiks Ojamaale edasi sõita. Vahepääl kavatsesid liivlased teekonnal tema mõrvamist, aga torreidalane Anno hoiatas teda ja manities tagasi pöörma. Niitao jõudis ta siis igati vapustatult tagasi Ükskülasse, ilma et oleks saanud maalt ära põgeneda

12. Seepärast saatis ta salaja paavsti poole teele oma saadiku, vend Teoderichi Toreidast, et nõu saada. Kui see nägi, et tal pole võimalust maalt välja pääseda, võitis ta vaga kavalusega liivlaste luureplaanid, ratsutades hobuse seljas, stoolalinik üll, raamat ning õnnistatud vesi kaasas, otsekui tõbist külastama. Ja oma teekonna põhjust

pärivaile teelistele seda ettekäändeks esitades pääses ta maalt lahkuma ning jõudis kõige kõrgema kirikupää juurde. Sääl siis kõrgem kirikuvürst, kui sai kuulda ristitute arvu, arvas hääks, et neid ei tohi maha jätta, vaid otsustas, et neid tuleb sundida unku kinni pidama, mida nad olid omatahtsi pidada tõotanud. Ta lubas liiatigi kõikide pattude andeksandmist kõigile, kes, võttes risti, teele lähevad, et sellele algavale kogudusele uut õhutust viia.

13. Juba sel ajal oli seesinane piiskop" koos ühe Rootsi hertsogiga, sakslastega ja ojamaalastega kuralasile sõjaga pääle läinud, aga tormist kõrvale aetult randusid nad Eestimaa maakonnas Virumaal ja laastasid kolm päeva seda maad. Aga sel ajal kui virulased usu vastuvõtu läbirääkismis pidasid, heiskas hertsog purjed ning pööris sakslaste meelehärmiks minema, võttes neilt parem üksnes tribuuti.

14. Selle vahe sees lange svaga mälestuse järele jätnud piiskop Meinhard pärast rohket töövaeva ja valu tõvevoodisse, ja nähes, et tal tuleb surra, kutsus kokk kõik Liivimaa ningToreida vanemad, küsides, kas, nad pärast tema surma sooviksid ilma piiskopita olla. Ag anemad kinnitasid, et nad soovivad pigemini piiskopist ning kiriklikust isast rõõmu tunda. Ja varsti pärast seda lõpetas piiskop pma viimse elupäeva.

3.2.3 Richard Kleis's Translations Transcription

Richard Kleis is an Estonian historian and classical philologist born in 06.10.1896 and deceased in 06.18.1982 (ISIK, Kleis, 2004). Having worked in many fields he is most know about his parallel translation of the Livonian chronicle. For this book's transcription, refer to the annex 7.

3.2.4 Unique Words

In the case of unique words sub-chapter, we are viewing all the words in text that are repeated only once, meaning that code will sort out words which have the smallest frequency possible – 1. Below we find the Grok prompt and its generated code with the work author's edits and comments about the process (Grok, personal communication, July 25, 2025):

"Write me a Python script which analyses 3 text files simultaneously for all unique words found in them. It has to take into account that the text language is Estonian and that the script needs to use UTF-8 encoding. Make it create 3 separate lists of all the unique words that are present in each text. Lastly, it must create a separate list of the count of unique words by their starting letters listed accordingly to Estonian alphabet".

Curated and edited code with comments:

```
# Import the re (regular expressions) module and defaultdict dictionary subclass from collections which provides a default value for the non-existent keys.

import re

from collections import defaultdict

# Define the file(s) that need to be read to be under file_path.

def read_file(file_path):

# Open and return the specific text files in lowercase UTF-8 encoding.

    try:

        with open(file_path, 'r', encoding='utf-8') as file:

            return file.read().lower()

# In case the file is not found the terminal will show an error message of the file not being found and code returns back to the start of the block.

    except FileNotFoundError:

        print(f"Error: File {file_path} not found.")

        return ""

# In case the file is not properly encoded, the terminal will show UnicodeDecodeError, and the code returns back to the start of the block.

    except UnicodeDecodeError:

        print(f"Error: File {file_path} is not properly UTF-8 encoded.")

        return ""

# Define get_unique_words function and take text as its input.

def get_unique_words(text):

# Utilise re.findall to find all existing words, including the ones containing Estonian special characters, from the text file. Define a minimum value of one letter per word, so it could convert the words into a set, then to a list and return them alphabetically sorted.

    words = re.findall(r'[a-zõäöüšž]+', text, re.UNICODE)

    return sorted(list(set(words)))

# Define the word list that counts words by the starting letter.

def count_words_by_letter(word_list):
```

```
# Create a defaultdict with an integer value, meaning that by default the word count is 0 and every suitable word will make the count go up. Secondly, create a loop to go though every word on the previously made list.
    letter_counts = defaultdict(int)
    for word in word_list:
# Make sure that the word is not an empty string. Then, get the first character of the word and start increasing the number depending on how many words start with the specific letter. Finally, return all the letter counts separately in alphabetical order.
        if word:
            first_letter = word[0]
            letter_counts[first_letter] += 1
    return letter_counts
# Define the main function of the program.
def main():
# Define the file paths for used input files of Kleis, Mägiste and Jung. These files must be added as raw strings, meaning the additional letter r" in front, as otherwise the path backslashes are stopping the blocks functioning.
    file1_path = r"C:\Users\amher\Documents\kood\Kleis 1liber comp.txt"
    file2_path = r"C:\Users\amher\Documents\kood\Mägiste 1liber comp.txt"
    file3_path = r"C:\Users\amher\Documents\kood\Jung 1liber comp.txt"
# Read the three files.
    text1 = read_file(file1_path)
    text2 = read_file(file2_path)
    text3 = read_file(file3_path)
# Extract the unique words from each file.
    unique_words1 = get_unique_words(text1)
    unique_words2 = get_unique_words(text2)
    unique_words3 = get_unique_words(text3)
# Combine all unique words from the three files into one set.
    all_unique_words = set(unique_words1 + unique_words2 + unique_words3)
    letter_counts = count_words_by_letter(all_unique_words)
# Define the Estonian alphabet and its special characters.
    estonian_alphabet = ['a', 'b', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n', 'o', 'p', 'r', 's', 't', 'u', 'v', 'õ', 'ä', 'ö', 'ü', 'z', 'š', 'ž']
# Print the explanative message for the results in the 1st file.
    print("\nUnique words in file 1:")
# Print the list of unique words form the 1st file.
    print(unique_words1)
# Print the text "Total unique words:" and then the total count of them.
    print(f"Total unique words: {len(unique_words1)}\n")
```

```
# Repeat the same actions with file 2.
    print("Unique words in file 2:")
    print(unique_words2)
    print(f"Total unique words: {len(unique_words2)}\n")
# Repeat the same actions with file 3.
    print("Unique words in file 3:")
    print(unique_words3)
    print(f"Total unique words: {len(unique_words3)}\n")
# Print the “Count of unique words by starting letter (in Estonian alphabetical order):”).
   print("Count of unique words by starting letter (Estonian alphabet order):")
# For each letter in the Estonian alphabet, get a matching numerical value and then print the letter followed by its count.
    for letter in estonian_alphabet:
        count = letter_counts.get(letter, 0)
        print(f"{letter}: {count}")
# Run the directly executed script.
if __name__ == "__main__":
# Make the main function run the whole process.
    main()
```

All unique words counted by their starting letters listed according to Estonian alphabet:

a: 72	f: 0	j: 58	n: 53	s: 142	õ: 8	z: 1
b: 4	g: 6	k: 198	o: 48	t: 184	ä: 7	š: 0
d: 2	h: 65	l: 108	p: 146	u: 21	ö: 3	ž: 0
e: 78	i: 25	m: 91	r: 68	v: 108	ü: 38	

Table 14. The Unique Words Counted by Their Starting Letters

By the counted words we see that the most common starting letters for unique words were k (198), t (184) and s (142) while, not surprisingly the least common were š (0) and ž (0).

The following sub-chapters contain words which are the output of code showing all unique words in the three transcriptions separately:

3.2.4.1 Jaan Jung

['abimees', 'abita', 'abiwäge', 'aega', 'aegapidi', 'aegul', 'aetut', 'aga', 'ajada', 'ajal', 'ajamisel', 'aks', 'andeksandmist', 'anno', 'antut', 'appi', 'armastuse', 'armuõpetuse', 'armuõpetust', 'aru', 'arvasiwad', 'arwasivad', 'aseme', 'asja', 'asjata', 'astub', 'augustini', 'auusa', 'auuwäärt', 'baabiloni', 'bolotski', 'breemi', 'daanlased', 'düüna', 'ebajumala', 'edasi', 'ees', 'eesnimetatut', 'eest', 'eesti', 'eestimaale', 'ega', 'ehe', 'ehitas', 'ehitati', 'ehituse', 'ehitusest', 'ehk', 'ehmatuse', 'ei', 'eksinud', 'elu', 'elupäewad', 'enam', 'endid', 'endile', 'endille', 'enese', 'enesest', 'ennast', 'enne', 'ennegi', 'ennemine', 'ennenimetatut', 'esimene', 'esimese', 'esiste', 'esiti', 'et', 'ette', 'ettewõttes', 'ettewõttest', 'ewangeeliummit', 'gerweder', 'gootidega', 'gootlandi', 'gootlandis', 'gootlandist', 'haavatut', 'haige', 'haigus', 'haiguse', 'hakatses', 'hakatuses', 'hakkas', 'halatust', 'halli', 'hartwigi', 'heidab', 'heita', 'herzog', 'herzogiga', 'hhawatut', 'hiljemalt', 'hing', 'hinge', 'hobune', 'hobuse', 'holmi', 'holmis', 'hoolekandmine', 'hooleks', 'hoolele', 'hulgas', 'huntide', 'häda', 'hävitasivad', 'hääd', 'hüüdes', 'i', 'ihu', 'iilo', 'ilma', 'inglitest', 'inimesi', 'isa', 'isi', 'istuda', 'itsusejs', 'ja', 'jaaab', 'jaani', 'jagu', 'jala', 'jalga', 'juba', 'juhatuse', 'juhtida', 'juhtus', 'julgeste', 'jumal', 'jumala', 'jumalate', 'jumalatele', 'jumalik', 'jumalikul', 'juuda', 'juurde', 'juure', 'juustega', 'jäetama', 'jäetut', 'jäi', 'jälle', 'järel', 'järele', 'järgmisel', 'jätab', 'jätnud', 'jääda', 'jäälle', 'jões', 'jõge', 'jõkke', 'jõudma', 'jüudis', 'ka', 'kaastöötegija', 'kahe', 'kahjuga', 'kambad', 'kannatama', 'kants', 'kantsi', 'kantsid', 'kantut', 'karjane', 'kartsiwad', 'kasu', 'kaswis', 'katsmakäik', 'kauba', 'kauguselt', 'kauplesiwad', 'kaupmeeste', 'kaupmeestega', 'kaupmehed', 'kavalusega', 'kawaluse', 'kawaluses', 'ke', 'keelab', 'keelis', 'kelle', 'kellele', 'kes', 'kibeda', 'kibid', 'kindlad', 'kindlaid', 'kingitusi', 'kinni', 'kinnitasiwad', 'kinnitatakse', 'kinnitatut', 'kiriku', 'kiusamise', 'kiviraijujaid', 'kiwi', 'kloostris', 'koguda', 'koguduse', 'koguni', 'kogus', 'kokku', 'kolm', 'kombete', 'kristlaste', 'kristuse', 'kui', 'kuida', 'kuidas', 'kukub', 'kulewene', 'kuli', 'kuna', 'kuninga', 'kurvastatut', 'kus', 'kutsus', 'kutsutud', 'kutut', 'kuulis', 'kuulnud', 'kuulutades', 'kuulutaja', 'kuulutamas', 'kuulutuste', 'kuus', 'käega', 'käes', 'käest', 'kätte', 'kõige', 'kõigile', 'kõigsesuguse', 'kõik', 'kõiki', 'kõikisugu', 'köitega', 'kül', 'külasse', 'külast', 'küll', 'küsis', 'küsisiwad', 'küsiwad', 'küttidest', 'laewa', 'laewate', 'langes', 'lapsiks', 'laseb', 'laskiwad', 'lasta', 'lastis', 'lavadega', 'ligi', 'lihawõte', 'liia', 'liisu', 'liivlased', 'liivlasi', 'liivlaste', 'liivlastega', 'liivlastele', 'liiwi', 'liiwilaste', 'liiwilastele', 'liiwlane', 'liiwlased', 'liiwlaste', 'liiwlastega', 'littawilased', 'littawilastega', 'luba', 'lubad', 'lubadusi', 'lubanud', 'lubasiwad', 'lubati', 'lubjaga', 'lugu', 'lunastanud', 'läbi', 'lähäb', 'lähäksiwad', 'läinud', 'läks', 'läksivad', 'lõpetas', 'lõpetuse', 'lühikest', 'maa', 'maad', 'maakond', 'maal', 'maale', 'maalt', 'maha', 'majasse', 'maksab', 'maksivad', 'maksu', 'manitseb', 'martinile', 'meele', 'meelega', 'mees', 'mehed', 'meid', 'meie', 'meinhard', 'meinhardi', 'meistrid', 'metsades', 'mida', 'minema', 'minna', 'mis', 'mitme', 'mitmesuguse', 'mitspärast', 'mitte', 'murega', 'mõndasugust', 'mõtleb', 'mööda', 'müne', 'müned', 'müürid', 'naabred', 'naabri', 'nad', 'nagu', 'naiste', 'nead', 'need', 'neid', 'neil', 'neile', 'neilt', 'neist', 'nemad', 'nende', 'nendega', 'nii', 'niisamma', 'niisuguse', 'nime', 'nimed', 'nimetatud', 'nimetatut', 'normannid', 'nägi', 'näinud', 'näitis', 'nõi', 'nõnda', 'nõnta', 'nõu', 'nõutut', 'nõuu', 'nõuus', 'nüüd', 'oda', 'ohwerdada', 'ohwri', 'oleks', 'olewat', 'oli', 'olivad', 'oliwad', 'olla', 'olnud', 'oma', 'omad', 'omadega', 'omalt', 'omas', 'ommeti', 'on', 'ordu', 'ordust', 'otsima', 'paawst', 'paawsti', 'pagana', 'paganad', 'paganate', 'pahanduseks', 'paigal', 'pakkumine', 'palju', 'palub', 'palus', 'palwetega', 'pannakse', 'pannud', 'parandama', 'paremini', 'pattude', 'patu', 'pea', 'peaksiwad', 'peksnud', 'penikoorma', 'peret', 'pesemise', 'petsiwad', 'pidada', 'pidama', 'pidand', 'pidas', 'pidi', 'pidiwad', 'piiskop', 'piiskopi', 'piiskopil', 'piiskopita', 'piiskopits', 'piiskoppi', 'poolest', 'poolt', 'praegustel', 'preeseter', 'preester', 'preestri', 'priitahtlikult', 'purjus', 'päewa', 'päewal', 'päikese', 'päralt', 'pärast', 'pääl', 'pääle', 'pääpiiskopi', 'pääsenud', 'pääsis', 'pääsnud', 'päätük', 'põhjuste', 'põlli', 'pöörata', 'pööris', 'püha', 'pühast', 'pühitama', 'pühitsetut', 'püüsiwad', 'raabi', 'raamat', 'rabi', 'rahvast', 'rahwaga', 'rahwas', 'rahwast', 'rahwaste', 'randa', 'raske',

'raskemaks', 'ratsa', 'rawas', 'riie', 'riisunud', 'riisusiwad', 'ris', 'risti', 'ristida', 'ristimise', 'ristis', 'ristitatut', 'ristitud', 'ristitut', 'ristiusku', 'ristmist', 'rohtude', 'rohtusi', 'rooma', 'rootsi', 'rumaluses', 'rumalust', 'rusikatega', 'ruurlaste', 'rõõmuks', 'sa', 'saab', 'saada', 'saadetut', 'saadiku', 'saama', 'saanud', 'saata', 'saatis', 'sagedaste', 'sai', 'saivad', 'saiwad', 'saksa', 'sakslased', 'sakslaste', 'sakslastega', 'salaja', 'salaliku', 'seda', 'sedasamma', 'see', 'seegebergi', 'sees', 'seesamma', 'seie', 'seiswad', 'seitsme', 'selg', 'selgas', 'seljas', 'selle', 'sellel', 'sellelsammal', 'sellepärast', 'selles', 'sellesammal', 'sellest', 'sellewahel', 'semgalid', 'sest', 'siis', 'siit', 'silmapisaraid', 'silmaweega', 'sinna', 'sool', 'soowiwad', 'suguste', 'sunnitut', 'surma', 'surmatunnikest', 'surnud', 'suueste', 'suuga', 'suurte', 'suvel', 'säetut', 'säädis', 'säädsivad', 'sääl', 'säält', 'sõbrad', 'sõdima', 'sõitis', 'sõitma', 'sõna', 'sõnu', 'sõtta', 'südame', 'sündimata', 'sündinud', 'süüa', 'ta', 'taewa', 'taga', 'taganes', 'taganesiwad', 'tagasi', 'tagsitulejat', 'tahaks', 'tahawad', 'tahta', 'tahtis', 'tahtmine', 'tahtnud', 'tahtsiwad', 'talvel', 'tampis', 'tants', 'tantsi', 'tantsisi', 'tappa', 'tarwis', 'teda', 'tee', 'teed', 'teekond', 'teekonna', 'teenijaid', 'teenisuse', 'tegi', 'tehtut', 'teinud', 'teise', 'teised', 'teistkorda', 'tema', 'temale', 'temalt', 'tere', 'teretusega', 'teretwad', 'terweks', 'theodorich', 'theodorichi', 'theodorichile', 'theodorid', 'tige', 'toodi', 'toreida', 'toreidas', 'toreidast', 'tormi', 'tuimsust', 'tulega', 'tulema', 'tuletada', 'tulewal', 'tuli', 'tuliwad', 'tundis', 'tundmata', 'tunnud', 'tuua', 'tähele', 'tähte', 'täielikku', 'täisivad', 'täitnud', 'tääb', 'tääbmata', 'tääbnud', 'tääda', 'täädmamees', 'tõeste', 'tõestuse', 'tõmbas', 'tõotades', 'tõotas', 'tõotati', 'tõotust', 'tõotustega', 'tõsine', 'tõstab', 'tõstis', 'tõusevad', 'töö', 'tööd', 'tühjaks', 'ualo', 'uidenago', 'umbusk', 'unest', 'unustasiwad', 'usklik', 'usku', 'uskus', 'usu', 'veel', 'viies', 'viimaks', 'viisil', 'viiso', 'viliendi', 'viru', 'voldemari', 'välja', 'võera', 'võersil', 'waade', 'waenliku', 'waga', 'wahe', 'wahel', 'waid', 'waimulikud', 'waldeko', 'walega', 'waletasiwad', 'walmis', 'walu', 'wammuse', 'wanded', 'wandega', 'wanemad', 'wangi', 'waranduse', 'warisemised', 'warjutuse', 'wastu', 'wastupanek', 'wastuwõtmine', 'wastuwõtte', 'wawade', 'wedada', 'wee', 'wend', 'wenda', 'wendadega', 'wenna', 'wesi', 'wiha', 'wihma', 'wiimaks', 'wiisivad', 'wiiso', 'wili', 'wiljad', 'wiru', 'wirulased', 'woodi', 'wäga', 'wäge', 'wägi', 'wälja', 'wõeti', 'wõi', 'wõidetut', 'wõtaksiwad', 'wõtavawad', 'wõtnud', 'wõtta', 'wõttis', 'zisterzieni', 'ära', 'ärasõitu', 'äratanud', 'äratuseks', 'õiglane', 'õnnis', 'õpetas', 'ööldi', 'ühe', 'ühes', 'ühte', 'ühteainust', 'üks', 'ükskord', 'ükskülа', 'ükskülas', 'ükskülasse', 'üle', 'üleannetud', 'ülem', 'ülesse', 'ületäalwe', 'ümber', 'ütelbes', 'üteldes', 'ütleb', 'ütles', 'ütsküla']

Total unique words: 749

3.2.4.2 Julius Mägiste

['actult', 'aga', 'ajal', 'ajani', 'algatusest', 'algavale', 'alguses', 'algust', 'alles', 'alo', 'aluskividele', 'andeksandmist', 'andsid', 'annab', 'anno', 'anti', 'ara', 'arbuga', 'arbuja', 'armu', 'arvamist', 'arvas', 'arvu', 'astus', 'asulas', 'asus', 'augustinuse', 'aulikult', 'auväärsete', 'breemeni', 'ebajumalate', 'edasi', 'eelnimetatud', 'eest', 'eestimaa', 'eestimaale', 'ehitades', 'ehitamise', 'ehitatakse', 'ehitati', 'ehituse', 'ei', 'elanikega', 'elarna', 'elu', 'elujala', 'elukommetega', 'elupäeva', 'enese', 'enestele', 'ennast', 'enne', 'ennegi', 'ep', 'esialgselt', 'esimene', 'esitades', 'esmalt', 'et', 'ette', 'ettekäändeks', 'ettenägelik', 'evangeeliumi', 'gerveder', 'haaratult', 'haavatud', 'haigus', 'hallpäine', 'heiskas', 'heitis', 'hertsog', 'hertsogiga', 'hinge', 'hinnaga', 'hirmu', 'hobune', 'hobuse', 'hobusel', 'hobust', 'hoiatas', 'holmist', 'holmlased', 'hoolde', 'hoolitsus', 'huntide', 'häbematu', 'hädaohtlikult', 'hävines', 'hääks', 'hüüdes', 'i', 'iga', 'igati', 'ihu', 'ilma', 'ime', 'inglite', 'isa', 'isast', 'ise', 'iseäranis', 'istuvat', 'ja', 'jala', 'jalga', 'johannese', 'ju', 'juba', 'juhtimise', 'juhtivat', 'julgesti', 'jumal', 'jumala', 'jumalaile', 'jumalate', 'jumalikule', 'jutlustades', 'jutlustaja', 'jutlustamise', 'juudase', 'juurde', 'jäi', 'järele', 'järgmisel', 'järgnedes', 'jätad', 'jätnud', 'jätta', 'jätva', 'jõudis', 'ka', 'kaasas', 'kaastööliseks', 'kahe', 'kahtlustuse', 'kandes', 'kangekaelsust', 'kannatas', 'kaotusi', 'karjane', 'kas', 'kasu', 'kaugusest', 'kaupmeeste', 'kaupmeestega', 'kaupmeestel', 'kavalusega', 'kavalustega', 'kavatsesid', 'kavatsusega', 'kavatsust', 'keda', 'keegi', 'kellele', 'kerkis', 'kerkisid', 'kes', 'kindlustused', 'kindlustusi', 'kinke', 'kinni', 'kinnitas', 'kinnitasid', 'kinnitatud', 'kinnituse', 'kinnitust', 'kiriklikust', 'kiriku', 'kirikupää', 'kirikuvürst', 'kiskuda', 'kivid', 'kiviehitusest',

'kivitegijad', 'kloostris', 'kogu', 'kogudusele', 'kogunes', 'kogunud', 'kohale', 'kohaselt', 'kohta', 'koju', 'kokko', 'kokku', 'kolm', 'kombeks', 'koos', 'kord', 'korda', 'kotta', 'kristlaste', 'kristuse', 'krundi', 'kui', 'kuist', 'kukuks', 'kulud', 'kummarduse', 'kunagi', 'kuralasile', 'kurkudele', 'kutsuda', 'kutsus', 'kuulda', 'kuulevene', 'kuus', 'käega', 'kõige', 'kõigile', 'kõik', 'kõikide', 'kõrgem', 'kõrgema', 'kõrvaklada', 'kõrvale', 'külas', 'külastada', 'külastama', 'küll', 'küsides', 'küsiti', 'la', 'laastasid', 'laastates', 'laevade', 'laevaga', 'laevakõitega', 'lahkuma', 'lahkumisega', 'lahkumist', 'lahkusid', 'lambad', 'langes', 'lasksid', 'lasta', 'lasteks', 'leedulased', 'leedulaste', 'leidis', 'lihavõtte', 'lihtsalt', 'liiatigi', 'liivi', 'liivimaad', 'liivimaale', 'liivimaast', 'liivlane', 'liivlased', 'liivlasile', 'liivlasilt', 'liivlaste', 'liivlastega', 'linnus', 'linnuse', 'linnusest', 'liviimaa', 'loa', 'lubanud', 'lubas', 'lugeda', 'luureplaanid', 'läbirääkimisi', 'lähe', 'läinud', 'läkitati', 'läks', 'lõpetas', 'maa', 'maad', 'maakonnas', 'maalt', 'maha', 'mahajäetuid', 'mainitud', 'maksid', 'manitses', 'martinile', 'meel', 'meelde', 'meelehärmiks', 'meeles', 'meelest', 'mees', 'meid', 'meie', 'meinhard', 'meinhardi', 'metropoliidilt', 'metsades', 'metsikuse', 'mida', 'miili', 'miks', 'millal', 'mille', 'min', 'minema', 'mingisuguseid', 'mis', 'missuguse', 'mitmel', 'mitte', 'muidugi', 'murti', 'muude', 'muudest', 'muul', 'mälestuse', 'määras', 'mõju', 'mõned', 'mõnikad', 'mõrvamist', 'mõtlesid', 'mõttega', 'mööda', 'müürid', 'müürilubjaga', 'na', 'naabrid', 'nad', 'nagu', 'naiselikust', 'naiste', 'need', 'neid', 'neil', 'neile', 'neilt', 'neist', 'nemad', 'nende', 'niihästi', 'niitao', 'nime', 'nimed', 'nimelt', 'nimetatud', 'ning', 'nistas', 'nood', 'norralased', 'nägi', 'nähes', 'näinud', 'nõnda', 'nõndaviisi', 'nõu', 'nõuande', 'nõuks', 'oda', 'ohverdada', 'ohverduse', 'ojamaalastega', 'ojamaale', 'ojamaalt', 'ojarnaalt', 'ole', 'oleks', 'oleksid', 'oli', 'olid', 'olla', 'olles', 'olnud', 'oma', 'omad', 'omadega', 'omakorda', 'omal', 'omanduseks', 'omatahtsi', 'ometi', 'on', 'ordu', 'osa', 'osta', 'ostnud', 'otsekui', 'otsis', 'otsuseks', 'otsustas', 'paabeli', 'paavsti', 'paganailt', 'paganlikud', 'pajatades', 'palju', 'paljusid', 'palus', 'palvetas', 'palvetega', 'pandi', 'panema', 'pani', 'parandas', 'paraneb', 'parem', 'pattude', 'patu', 'peksnud', 'peletanud', 'pesemisega', 'petlikult', 'petsid', 'pidada', 'pidades', 'pidama', 'pidanud', 'pidasid', 'pidid', 'pigemini', 'piiridest', 'piiskop', 'piiskopiks', 'piiskopil', 'piiskopist', 'piiskopita', 'piiskoppi', 'pisaraid', 'pisaratega', 'pole', 'polotski', 'poole', 'poolest', 'poolt', 'preester', 'puhtasüdamelisus', 'purjed', 'puruks', 'päeva', 'päeval', 'päikese', 'päikesevarjutuse', 'pärast', 'pärastine', 'pärisid', 'pärivaile', 'pääle', 'pääseda', 'pääses', 'põgeneda', 'põhjust', 'põikpäisus', 'põldudel', 'põllul', 'pööris', 'pöörma', 'püha', 'pühale', 'pühitseti', 'pühkida', 'püskop', 'püüdsid', 'que', 'raamat', 'rabi', 'rahabi', 'rahutaks', 'rahvaist', 'rahvas', 'rahvast', 'randusid', 'raskenes', 'ratsutades', 'ravi', 'riisunud', 'risti', 'ristida', 'ristides', 'ristija', 'ristimise', 'ristimist', 'ristiti', 'ristitud', 'ristitute', 'ristiusu', 'rohket', 'rohte', 'rohutaimede', 'rootsi', 'rumalast', 'rumalust', 'rusikaga', 'rõõmu', 'ründama', 'sa', 'saab', 'saada', 'saades', 'saadetava', 'saadi', 'saadiku', 'saanud', 'saata', 'saates', 'saatis', 'sai', 'said', 'saksa', 'saksamaale', 'sakslaste', 'sakslastega', 'salaja', 'salakavalus', 'salakavalusest', 'sama', 'samal', 'samasuguse', 'sattunud', 'seast', 'seda', 'see', 'seega', 'seepärast', 'sees', 'seesama', 'seesinane', 'seesinase', 'seesinasel', 'seesinases', 'segadusse', 'segebergi', 'seitsme', 'sel', 'selja', 'seljas', 'selle', 'sellele', 'sellest', 'seltskonnas', 'semgalid', 'sest', 'sihiga', 'siis', 'silmakirjalikult', 'sinna', 'soola', 'sooviksid', 'soovivad', 'stoolalinik', 'sundida', 'surija', 'surma', 'surmaohte', 'surra', 'suuga', 'suvel', 'sääl', 'sõita', 'sõjaga', 'sõjaväe', 'sõjaväge', 'sõjavägi', 'sõna', 'sõprussidemeis', 'südamekibedus', 'sündinud', 'süütu', 'ta', 'taanlased', 'taevasse', 'taganenud', 'taganesid', 'tagasi', 'tagasisõidu', 'tagasitulevat', 'tagasitõmbumist', 'tais', 'takistas', 'tal', 'talvel', 'talvitasid', 'tampis', 'teda', 'teekonna', 'teekonnal', 'teele', 'teelistele', 'teenreid', 'tehti', 'tehtud', 'teine', 'teise', 'teist', 'tema', 'temalt', 'teoderich', 'teoderichi', 'teoderichile', 'teoderichilt', 'tere', 'tertslaste', 'tervitasid', 'tervitussõnadega', 'tihti', 'tohi', 'toodi', 'toreida', 'toreidalane', 'toreidas', 'toreidast', 'tormist', 'trades', 'tribuute', 'tribuuti', 'tugevate', 'tuleb', 'tulega', 'tulemas', 'tuletada', 'tulevikus', 'tuli', 'tulid', 'tunda', 'tundis', 'tundnud', 'tuua', 'tähtpäeva', 'täide', 'täielikult', 'täitnud', 'tõbine', 'tõbist', 'tõotades', 'tõotanud', 'tõotas', 'tõotati', 'tõotus', 'tõotuse', 'tõotusega', 'tõotust', 'tõrkusid', 'tõsi', 'tõstis', 'tõvevoodisse', 'töö', 'tööle', 'töövaeva', 'tühjaminemist', 'uldenago', 'unest', 'unustatud', 'uputuses', 'uskmattusest', 'usku', 'uskus', 'usu', 'usust', 'uuel', 'uuesti', 'uut', 'vaade', 'vad', 'vaga', 'vahe', 'vaheajal', 'vahepääl', 'vaid', 'vaimulikud', 'vaimus', 'vaja', 'valdeko', 'valmimist', 'valminud', 'valu', 'vandega', 'vanemad', 'vangipõlve', 'vapustatult', 'vara', 'varju', 'varsti', 'vastristitu', 'vastu', 'vastuvõtmine', 'vastuvõtmise', 'vastuvõtu', 'vatmanit', 'veel', 'veelgi', 'vees', 'vend', 'vennad', 'vesi', 'vibumeeste', 'vietso', 'vihmavee', 'viia', 'viidavat', 'viiendik', 'viimast', 'viimse', 'viimselt', 'viisid', 'viisil', 'vili', 'viljendi', 'virulased', 'virumaal', 'vladimirilt', 'voodsam', 'väga', 'väinajões', 'väinajõge', 'väinajõkke',

'välja', 'või', 'võiks', 'võimalust', 'võitis', 'võitu', 'võtavad', 'võtmast', 'võtnud', 'võtta', 'võttes', 'võttis', 'vürstilt', 'ära', 'äratas', 'õhutust', 'õndsa', 'õnnistatud', 'ögivat', 'ühe', 'ühtainsatki', 'ühtlasi', 'üks', 'üksi', 'ükskõik', 'ükskülа', 'ükskülasse', 'üksnes', 'üle', 'ülekohtuselt', 'ülesehitamist', 'üll', 'ülo', 'üteldes']

Total unique words: 741

3.2.4.3 Richard Kleis

['abil', 'aegadel', 'aetud', 'aga', 'ainult', 'aja', 'ajada', 'ajal', 'alal', 'algust', 'alo', 'ammuküttidelt', 'andamit', 'andega', 'andeksandmist', 'andis', 'anno', 'antakse', 'appi', 'arbuja', 'armastuse', 'armuõpetuse', 'aruga', 'arvas', 'arvasid', 'arvavad', 'arvu', 'asetab', 'astub', 'asuvad', 'augustinuse', 'austusväärse', 'auväärse', 'breemeni', 'ebajumalakummardajad', 'ebajumalateenistuse', 'edasi', 'edaspidi', 'eest', 'eestimaa', 'eestimaale', 'ega', 'ehitama', 'ehitamise', 'ehitati', 'ehitatud', 'ehituse', 'ehkki', 'ei', 'eksiteel', 'ellu', 'elu', 'elujala', 'elupäevad', 'eluviisiga', 'end', 'endalt', 'ennast', 'enne', 'ennegi', 'ent', 'erutab', 'esa', 'esikkirikut', 'esimene', 'esimesena', 'esimesest', 'esimestena', 'esmalt', 'et', 'ette', 'ettenägelik', 'ettevõtmisest', 'gerweder', 'haavata', 'haavatud', 'haiget', 'haigus', 'hakkab', 'hakkavad', 'halli', 'heaks', 'heiskab', 'hertsog', 'hertsogiga', 'hinge', 'hinnaga', 'hobune', 'hobuse', 'hobust', 'hoiatab', 'hoida', 'hoides', 'holmi', 'holmlased', 'hoolde', 'hoolitsus', 'hukkasaatmist', 'hulgast', 'huntide', 'häbematu', 'hädaohtu', 'hävisid', 'hüljatuid', 'i', 'iga', 'iku', 'ilma', 'ilmsüütu', 'inglid', 'inimesed', 'isa', 'isand', 'ise', 'iseendale', 'issanda', 'istuvat', 'ja', 'jala', 'jalga', 'jaoks', 'johannese', 'juba', 'julgesti', 'jumal', 'jumala', 'jumalaile', 'jumalate', 'jutlustada', 'jutlustaja', 'jutlustama', 'juuda', 'juurde', 'jäetakse', 'jäetama', 'jäi', 'jälle', 'järgmisel', 'järgnevad', 'jätab', 'jätad', 'jääda', 'jõge', 'jõudis', 'ka', 'kaasas', 'kaastööline', 'kahe', 'kahtlustama', 'kandes', 'kandsid', 'kangekaelsus', 'kangekaelsust', 'kannatas', 'kaotusi', 'karjane', 'kartma', 'kas', 'kasu', 'kaupmeeste', 'kaupmeestega', 'kaupmehed', 'kavalad', 'kavaluse', 'kavalusest', 'kavatseb', 'kavatsedes', 'kavatsusega', 'kavatsust', 'keda', 'keegi', 'keelduvad', 'kelle', 'kellele', 'kerkivad', 'kes', 'kindlustusi', 'kinke', 'kinni', 'kinnitatakse', 'kinnitavad', 'kinnituse', 'kiriku', 'kirikut', 'kive', 'kiviehitisest', 'kiviraiujad', 'kloostris', 'kogu', 'koguneb', 'kohta', 'kokku', 'kokkutulekuks', 'kolm', 'koos', 'kord', 'korda', 'kordkorralt', 'korraldavad', 'kristlaste', 'kristuse', 'kui', 'kuid', 'kukuks', 'kulewene', 'kulul', 'kuna', 'kuningalt', 'kuralaste', 'kurdab', 'kutsub', 'kutsuda', 'kutsudes', 'kuulda', 'kuus', 'käega', 'käes', 'käia', 'käinud', 'kõigi', 'kõigile', 'kõik', 'kõrgeim', 'kõrgeima', 'kõrvale', 'külasse', 'külast', 'külastama', 'küll', 'küsib', 'küsima', 'küsimuste', 'küsitakse', 'küsivad', 'laevade', 'laevadega', 'laevaköitega', 'lahkuda', 'lahkudes', 'lahkumist', 'lahkunud', 'lambad', 'laseb', 'lasevad', 'lasksid', 'lasta', 'lasteks', 'lausudes', 'leedulased', 'lepitakse', 'lihavõtte', 'lihtsalt', 'liigvihmade', 'liisuga', 'liivimaa', 'liivimaad', 'liivimaal', 'liivimaale', 'liivimaast', 'liivlane', 'liivlased', 'liivlaste', 'liivlastega', 'liivlastele', 'linnus', 'linnuse', 'linnused', 'linnusest', 'loa', 'loobu', 'lubab', 'lubades', 'lubadusega', 'lubanud', 'lubas', 'lubatakse', 'lubavad', 'läbirääkimisi', 'läheb', 'läheks', 'lähevad', 'läkitas', 'läksid', 'lõpetas', 'lõpuks', 'lõugade', 'maakonna', 'maale', 'maalt', 'maatüki', 'maha', 'majja', 'manitseb', 'martinile', 'meelde', 'meelekibeduses', 'meelepahaks', 'meeles', 'meelsamini', 'mees', 'meid', 'meie', 'metsades', 'meynard', 'meynardi', 'meynardist', 'meynardit', 'miks', 'mille', 'minema', 'mingeid', 'mis', 'mitmeid', 'mitmel', 'mitmeti', 'mitte', 'muidugi', 'muude', 'muul', 'muutub', 'märatsemise', 'määrab', 'määratud', 'mõned', 'mõningad', 'mördi', 'mööda', 'müürid', 'naabrid', 'naabruses', 'nad', 'nagu', 'naiste', 'need', 'neid', 'neil', 'neile', 'neilt', 'nemad', 'nende', 'nii', 'niisiis', 'nime', 'nimed', 'nimelt', 'nimetatud', 'nood', 'norralaste', 'nägi', 'nähes', 'näinud', 'nõu', 'nõuandel', 'nüüdseil', 'oda', 'ohverdada', 'ohverdamise', 'ojamaal', 'ojamaalastega', 'ojamaale', 'ojamaalt', 'ole', 'oleks', 'olgu', 'oli', 'olid', 'olla', 'oma', 'omadega', 'omakorda', 'omandanud', 'omandiks', 'ometi', 'on', 'ordust', 'osa', 'otsustas', 'otsustavad', 'paabelit', 'paavsti', 'paganad', 'paganaid', 'paganatelt', 'paganlikud', 'palju', 'paljusid', 'palub', 'palus', 'palvetab', 'palvetega', 'panevat', 'pannakse', 'parajasti', 'pattude', 'patu', 'pea', 'peaga', 'peal', 'peale', 'pealegi', 'peapiiskop', 'peeneks', 'penikoorma', 'peret', 'pesta', 'petavad', 'pettuse', 'pidada', 'pidades', 'pidama', 'pidanud', 'pidasid', 'pigemini', 'piiskop', 'piiskopiks', 'piiskopil', 'piiskopist',

'piiskopita', 'piiskoppi', 'pikali', 'pisaraid', 'pisaratega', 'polnud', 'polotski', 'poolest', 'preester', 'puhtaks', 'purjed', 'päeva', 'päeval', 'päevast', 'päikese', 'päikesevarjutuse', 'pärale', 'pärast', 'pärastine', 'pääses', 'põhjusena', 'põldudel', 'pöördub', 'pöörduma', 'püha', 'pühitseb', 'pühitsetud', 'pühkida', 'püstitatakse', 'püüavad', 'raamat', 'rabi', 'rahabit', 'rahva', 'rahvas', 'rahvast', 'rahvaste', 'randa', 'ravida', 'reisida', 'rikkalikumat', 'risti', 'ristida', 'ristides', 'ristija', 'ristimise', 'ristimises', 'ristimist', 'ristitakse', 'ristitud', 'ristitute', 'rohtude', 'rohutaimi', 'rootsi', 'rumala', 'rusikatega', 'rõõmuks', 'rüüstanud', 'rüüstavad', 'sa', 'saa', 'saab', 'saabub', 'saadakse', 'saadeti', 'saadiku', 'saaki', 'saanud', 'saata', 'saavad', 'sageli', 'said', 'saksa', 'saksamaale', 'sakslaste', 'salaja', 'sama', 'samal', 'samuti', 'seal', 'seda', 'see', 'seepärast', 'seesama', 'seesinane', 'seetõttu', 'segebergi', 'seitsme', 'sel', 'selg', 'seljas', 'sellest', 'selsamal', 'seltsiga', 'semgalid', 'seni', 'sest', 'siia', 'siiralt', 'siis', 'soola', 'stoola', 'sundida', 'suri', 'surm', 'surma', 'surmaohte', 'suuda', 'suuga', 'suundub', 'suurte', 'suutmata', 'suvel', 'sõgeduse', 'sõidab', 'sõita', 'sõitis', 'sõjaretkel', 'sõjaväge', 'sõjavägi', 'sõna', 'sõprussidemeis', 'söövat', 'sündinud', 'ta', 'taanlaste', 'taevasse', 'tagajärjetust', 'tagamõttega', 'taganevad', 'tagant', 'tagasi', 'tagasitulevat', 'tagunud', 'tahaksid', 'tahavad', 'tahes', 'tahet', 'tahtel', 'takistab', 'talle', 'talvel', 'talvitanud', 'tampis', 'taolise', 'tarvis', 'tasusid', 'tavatsesid', 'teadmata', 'teda', 'tee', 'teekonna', 'teekäijaile', 'teeseldes', 'tegi', 'tehakse', 'tehtud', 'teine', 'teised', 'teist', 'tema', 'temalt', 'tere', 'terveks', 'tervitavad', 'tervitusega', 'theoderic', 'theoderici', 'toimet', 'tormiga', 'tsistertslaste', 'tuleb', 'tulega', 'tuletada', 'tulevad', 'tulevat', 'tuli', 'tundis', 'turaida', 'turaidalane', 'turaidas', 'turaidast', 'tuua', 'tuuakse', 'tuues', 'täida', 'täide', 'täielikult', 'tõbine', 'tõotab', 'tõotust', 'tõstab', 'tõstma', 'tõttu', 'töö', 'tööle', 'uldenago', 'unest', 'unustanud', 'uskmatus', 'usku', 'usu', 'usub', 'usukuulutaja', 'usust', 'uuesti', 'vabatahtlikult', 'vaevu', 'vaga', 'vahel', 'vahepeal', 'vaid', 'vaimulikud', 'vaimus', 'valelikult', 'valetas', 'valmis', 'valmissaamist', 'valmistusid', 'valusid', 'vande', 'vanemad', 'vangipõlve', 'vara', 'varal', 'varitsemisest', 'varjab', 'vastristitu', 'vastu', 'vastuvõtmise', 'vatmalit', 'veavad', 'veega', 'veel', 'vend', 'vennad', 'vesi', 'vietzo', 'viezo', 'viibivaid', 'viies', 'viimane', 'viimast', 'viisil', 'viivad', 'vili', 'viliendi', 'viljad', 'vintsutatuna', 'virulased', 'virumaa', 'voodisse', 'vundamentidelt', 'väga', 'vähe', 'väidab', 'väina', 'väinas', 'väinasse', 'välja', 'või', 'võidetakse', 'võtavad', 'võtmast', 'võtnud', 'võttis', 'wade', 'waldeko', 'woldemarilt', 'ylo', 'ägedamaks', 'ära', 'äratama', 'äratanud', 'õndsa', 'õndsale', 'õnnis', 'õnnistab', 'öeldes', 'ühe', 'ühiselt', 'ühtainustki', 'ühtlasi', 'üksikute', 'ükskülа', 'ükskülalastega', 'ükskülasse', 'ülalnimetatud', 'üle', 'ülekohus', 'ülempreester', 'ülempreestri', 'ütlesid']

Total unique words: 710

As a result of finding the unique words in these three texts, we can see that there is a large number of unique words per rather short text, which shows the richness of the Estonian language. For the first file we can highlight 749 words, for the second 741 words and for the third 710 words. Also, by comparing Jung's first text and the words extracted from it, we can see how much the older spelling of the text at that time differs from the more modern two-spelling text by Mägiste and Kleis. The data presented here would be good material for studying words and comparing their development, as well as for studying, for example, the order of letters in words over time and how it has changed. In any case, we can see from the examples given the richness and change of the Estonian language over time.

3.2.5 Common Words

This task's aim is to find out contrary to previous which are the most common words between the three text files while using the same methods.

Prompt:

"Write me a Python script that finds all the common words between three texts and brings out by text how many common words are found in each of them. In the end, also calculates them together and prints an output in alphabetical order."

Here you can find the Grok generated and the work author's edited code with comments (Grok, personal communication, July 25, 2025):

```
# Import the re (regular expressions) module and then counter dictionary which counts the item apparitions on the list.
import re

from collections import Counter

# Read the file and return its content.

def read_file(file_path):

# Open the file, read it in UTF-8 encoding and return its content in lower case.

    try:

        with open(file_path, 'r', encoding='utf-8') as file:

            return file.read().lower()

# In case the file is not found the terminal will show an error message of the file not found and code returns back to the start of the block.
    except FileNotFoundError:

        print(f"Error: File {file_path} not found.")

        return ""

# In case an encoding error appears the terminal will show UnicodeDecodeError and code returns back to the start of the block.
    except UnicodeDecodeError:

        print(f"Error: File {file_path} is not properly UTF-8 encoded.")

        return ""

# Extract all words from text.
```

```
def get_words(text):

# Return all matches of character sequences containing Estonian alphabet.

    return re.findall(r'[a-zõäöüšž]+', text, re.UNICODE)

# Find common words in the three lists.

def get_common_words(words1, words2, words3):

# Return word lists as three different sets.

    set1 = set(words1)

    set2 = set(words2)

    set3 = set(words3)

# Return alphabetically sorted list of the three combined sets.

    return sorted(list(set1 & set2 & set3))

# Count the appearances of common words in the list of words.

def count_common_words(words, common_words):

# Count the words.

    word_counts = Counter(words)

# Filter the common words.

    return {word: word_counts[word] for word in common_words}

# Make the main function run the whole process.

def main():

# Define the file paths for used input files of Kleis, Mägiste and Jung. These files
have to be added as raw strings, meaning the additional letter r” in front, as
otherwise the path backslashes stop the blocks from functioning.

    file1_path = r"C:\Users\amher\Documents\kood\Kleis 1liber comp.txt"

    file2_path = r"C:\Users\amher\Documents\kood\Mägiste 1liber comp.txt"

    file3_path = r"C:\Users\amher\Documents\kood\Jung 1liber comp.txt"

# Read the files separately.

    text1 = read_file(file1_path)

    text2 = read_file(file2_path)

    text3 = read_file(file3_path)

# Get all the words from each file.

    words1 = get_words(text1)
```

```
    words2 = get_words(text2)

    words3 = get_words(text3)

# Find common words between the three files.

    common_words = get_common_words(words1, words2, words3)

# Count occurrences of all common words in each file separately.

    counts1 = count_common_words(words1, common_words)

    counts2 = count_common_words(words2, common_words)

    counts3 = count_common_words(words3, common_words)

# Calculate total count of all the common words in three files all together.

    total_counts = {word: counts1[word] + counts2[word] + counts3[word] for word in
common_words}

# Print the text “Common words across all three texts:” and thereafter print the
count of all common words in total of the three texts. Then print a message and a
number of the total amount of common words.

    print("\nCommon words across all three texts:")

    print(common_words)

    print(f"Total number of common words: {len(common_words)}\n")

# Print the message "Counts of common words in Kleis 1liber comp.txt:" and then add
a list of common words with their quantities aside them in alphabetical order. In
the end print the total of common word occurrences in the Kleis text.

    print("Counts of common words in Kleis 1liber comp.txt:")

    for word in common_words:

        print(f"{word}: {counts1[word]}")

    print(f"Total occurrences in Kleis: {sum(counts1.values())}\n")

# Same output for Mägiste.

    print("Counts of common words in Mägiste 1liber comp.txt:")

    for word in common_words:

        print(f"{word}: {counts2[word]}")

    print(f"Total occurrences in Mägiste: {sum(counts2.values())}\n")

# Same output for Jung.

    print("Counts of common words in Jung 1liber comp.txt:")
```

```
    for word in common_words:
        print(f"{word}: {counts3[word]}")
    print(f"Total occurrences in Jung: {sum(counts3.values())}\n")
# Lastly, print the total of all occurrences across the three texts with approrpriate
message.
    print("Total occurrences of common words across all texts:")
    for word in common_words:
        print(f"{word}: {total_counts[word]}")
    print(f"Grand total occurrences: {sum(total_counts.values())}")
# Ensure the direct running of unimported file.
if __name__ == "__main__":
# Make the main function run the whole process.
    main()
```

3.2.5.1 Jaan Jung

aga: 11	isa: 5	kristlaste: 2	mööda: 1	on: 7	sa: 2	tampis: 1
ajal: 5	ja: 65	kristuse: 1	müürid: 1	palju: 2	saab: 2	teda: 8
andeksandmist: 1	jala: 2	kui: 19	nad: 5	palus: 2	saadiku: 1	teekonna: 1
anno: 1	jalga: 1	kuus: 1	nagu: 2	pattude: 1	saanud: 2	tema: 16
edasi: 2	juba: 1	käega: 1	naiste: 2	patu: 1	saata: 1	temalt: 1
eest: 1	jumal: 2	kõigile: 1	need: 1	pidada: 3	saksa: 2	tere: 1
eestimaale: 1	jumala: 6	kõik: 3	neid: 2	pidama: 1	sakslaste: 1	tulega: 1
ehitati: 2	jumalate: 1	küll: 1	neil: 1	piiskop: 6	salaja: 1	tuletada: 1
ehituse: 3	juurde: 4	lasta: 1	neile: 4	piiskopil: 1	seda: 4	tuli: 1

ei: 10	jäi: 1	liivlased: 1	neilt: 1	piiskopita: 1	see: 8	tundis: 1
elu: 4	järgmisel: 2	liivlaste: 2	nemad: 13	piiskoppi: 3	seitsme: 1	tuua: 1
ennast: 4	ka: 9	liivlastega: 1	nende: 9	poolest: 4	seljas: 1	tõotust: 1
enne: 2	kahe: 1	lubanud: 1	nime: 1	preester: 2	sellest: 2	töö: 1
ennegi: 1	karjane: 1	lõpetas: 1	nimed: 1	päikese: 1	semgalid: 1	unest: 1
esimene: 1	kasu: 1	maalt: 4	nimetatud: 1	pärast: 9	sest: 6	usku: 1
et: 25	kaupmeeste: 2	maha: 4	nägi: 2	püha: 3	siis: 8	usu: 3
ette: 1	kaupmeestega: 2	martinile: 1	näinud: 1	raamat: 1	surma: 1	veel: 1
haigus: 1	kellele: 2	mees: 1	nõu: 2	rabi: 1	suuga: 1	viisil: 1
hinge: 1	kes: 13	meid: 2	oda: 2	rahvast: 1	suvel: 1	välja: 1
hobune: 2	kinni: 1	meie: 1	oleks: 1	risti: 3	sõna: 1	ära: 15
hobuse: 4	kiriku: 2	metsades: 1	oli: 14	ristida: 5	sündinud: 1	ühe: 4
huntide: 1	kloostris: 1	minema: 1	olla: 2	ristimise: 1	ta: 24	üksküla: 2
i: 1	kokku: 4	mis: 3	oma: 16	ristitud: 1	tagasi: 7	ükskülasse: 2
ilma: 3	kolm: 1	mitte: 6	omadega: 1	rootsi: 1	talvel: 1	üle: 2

Table 15. The Common Words of Jaan Jung

Total occurrences in Jung: 573

3.2.5.2 Julius Mägiste

aga: 11	isa: 3	kristlaste: 2	mööda: 1	on: 4	sa: 2	tampis: 1
ajal: 6	ja: 28	kristuse: 1	müürid: 1	palju: 1	saab: 1	teda: 3
andeksandmist: 1	jala: 1	kui: 14	nad: 11	palus: 2	saadiku: 1	teekonna: 1
anno: 1	jalga: 1	kuus: 1	nagu: 2	pattude: 1	saanud: 4	tema: 9
edasi: 1	juba: 4	käega: 1	naiste: 1	patu: 1	saata: 1	temalt: 1
eest: 1	jumal: 2	kõigile: 1	need: 1	pidada: 1	saksa: 1	tere: 1
eestimaale: 2	jumala: 5	kõik: 1	neid: 3	pidama: 1	sakslaste: 2	tulega: 1
ehitati: 1	jumalate: 1	küll: 1	neil: 1	piiskop: 2	salaja: 1	tuletada: 1
ehituse: 1	juurde: 2	lasta: 2	neile: 4	piiskopil: 1	seda: 7	tuli: 1
ei: 5	jäi: 1	liivlased: 5	neilt: 1	piiskopita: 1	see: 4	tundis: 1
elu: 1	järgmisel: 2	liivlaste: 3	nemad: 1	piiskoppi: 2	seitsme: 1	tuua: 1
ennast: 5	ka: 1	liivlastega: 2	nende: 5	poolest: 1	seljas: 2	tõotust: 2
enne: 1	kahe: 1	lubanud: 1	nime: 1	preester: 2	sellest: 1	töö: 1
ennegi: 1	karjane: 1	lõpetas: 1	nimed: 1	päikese: 1	semgalid: 1	unest: 1
esimene: 1	kasu: 1	maalt: 3	nimetatud: 3	pärast: 10	sest: 2	usku: 3
et: 24	kaupmeeste: 4	maha: 4	nägi: 2	püha: 1	siis: 7	usu: 3
ette: 4	kaupmeestega: 1	martinile: 1	näinud: 1	raamat: 2	surma: 1	veel: 2
haigus: 1	kellele: 2	mees: 1	nõu: 2	rabi: 1	suuga: 1	viisil: 1
hinge: 2	kes: 6	meid: 2	oda: 1	rahvast: 2	suvel: 1	välja: 4

hobune: 2	kinni: 1	meie: 1	oleks: 2	risti: 1	sõna: 1	ära: 3
hobuse: 2	kiriku: 2	metsades: 1	oli: 10	ristida: 3	sündinud: 1	ühe: 1
huntide: 1	kloostris: 1	minema: 2	olla: 2	ristimise: 2	ta: 19	üksküla: 3
i: 1	kokku: 1	mis: 2	oma: 11	ristitud: 1	tagasi: 6	ükskülasse: 2
ilma: 3	kolm: 1	mitte: 3	omadega: 1	rootsi: 1	talvel: 1	üle: 2

Table 16. The Common Words of Julius Mägiste

Total occurrences in Mägiste: 440

3.2.5.3 Richard Kleis

aga: 5	isa: 3	kristlaste: 2	mööda: 1	on: 8	sa: 2	tampis: 1
ajal: 3	ja: 54	kristuse: 2	müürid: 1	palju: 1	saab: 2	teda: 4
andeksandmist: 1	jala: 1	kui: 18	nad: 17	palus: 1	saadiku: 1	teekonna: 1
anno: 1	jalga: 1	kuus: 1	nagu: 3	pattude: 1	saanud: 5	tema: 7
edasi: 1	juba: 3	käega: 1	naiste: 2	patu: 1	saata: 1	temalt: 1
eest: 1	jumal: 2	kõigile: 1	need: 1	pidada: 1	saksa: 1	tere: 1
eestimaale: 2	jumala: 5	kõik: 1	neid: 2	pidama: 1	sakslaste: 3	tulega: 1
ehitati: 1	jumalate: 1	küll: 2	neil: 2	piiskop: 6	salaja: 1	tuletada: 1
ehituse: 1	juurde: 3	lasta: 1	neile: 2	piiskopil: 1	seda: 6	tuli: 1
ei: 7	jäi: 1	liivlased: 7	neilt: 1	piiskopita: 1	see: 5	tundis: 1

elu: 1	järgmisel: 3	liivlaste: 3	nemad: 1	piiskoppi: 2	seitsme: 1	tuua: 1
ennast: 4	ka: 1	liivlastega: 2	nende: 5	poolest: 1	seljas: 2	tõotust: 2
enne: 1	kahe: 1	lubanud: 1	nime: 1	preester: 2	sellest: 1	töö: 1
ennegi: 1	karjane: 1	lõpetas: 1	nimed: 1	päikese: 1	semgalid: 1	unest: 1
esimene: 2	kasu: 1	maalt: 4	nimetatud: 1	pärast: 6	sest: 6	usku: 1
et: 21	kaupmeeste: 4	maha: 5	nägi: 2	püha: 1	siis: 5	usu: 5
ette: 5	kaupmeestega: 1	martinile: 1	näinud: 1	raamat: 2	surma: 1	veel: 2
haigus: 1	kellele: 2	mees: 1	nõu: 2	rabi: 1	suuga: 1	viisil: 2
hinge: 3	kes: 7	meid: 2	oda: 1	rahvast: 2	suvel: 1	välja: 3
hobune: 2	kinni: 2	meie: 1	oleks: 2	risti: 1	sõna: 1	ära: 2
hobuse: 3	kiriku: 1	metsades: 1	oli: 8	ristida: 3	sündinud: 1	ühe: 1
huntide: 1	kloostris: 1	minema: 3	olla: 1	ristimise: 2	ta: 23	ükskülа: 2
i: 1	kokku: 3	mis: 4	oma: 10	ristitud: 1	tagasi: 7	ükskülasse: 2
ilma: 1	kolm: 1	mitte: 1	omadega: 1	rootsi: 1	talvel: 1	üle: 3

Table 17. The Common Words of Richard Kleis

Total occurrences in Kleis: 482

3.2.5.4 Total

aga: 27	ja: 147	kui: 51	nagu: 7	patu: 3	saksa: 4	tulega: 3

ajal: 14	jala: 4	kuus: 3	naiste: 5	pidada: 5	sakslaste: 6	tuletada: 3
andeksandmist: 3	jalga: 3	käega: 3	need: 3	pidama: 3	salaja: 3	tuli: 3
anno: 3	juba: 8	kõigile: 3	neid: 7	piiskop: 14	seda: 17	tundis: 3
edasi: 4	jumal: 6	kõik: 5	neil: 4	piiskopil: 3	see: 17	tuua: 3
eest: 3	jumala: 16	küll: 4	neile: 10	piiskopita: 3	seitsme: 3	tõotust: 5
eestimaale: 5	jumalate: 3	lasta: 4	neilt: 3	piiskoppi: 7	seljas: 5	tõotust: 5
ehitati: 4	juurde: 9	liivlased: 13	nemad: 15	poolest: 6	sellest: 4	töö: 3
ehituse: 5	jäi: 3	liivlaste: 8	nende: 19	preester: 6	semgalid: 3	unest: 3
ei: 22	järgmisel: 7	liivlastega: 5	nime: 3	päikese: 3	sest: 14	usku: 5
elu: 6	ka: 11	lubanud: 3	nimed: 3	pärast: 25	siis: 20	usku: 5
ennast: 13	kahe: 3	lõpetas: 3	nimetatud: 5	püha: 5	surma: 3	usu: 11
enne: 4	karjane: 3	maalt: 11	nägi: 6	raamat: 5	suuga: 3	usu: 11
ennegi: 3	kasu: 3	maha: 13	näinud: 3	rabi: 3	suvel: 3	veel: 5
esimene: 4	kaupmeeste: 10	martinile: 3	nõu: 6	rahvast: 5	sõna: 3	veel: 5
et: 70	kaupmeestega: 4	mees: 3	oda: 4	risti: 5	sündinud: 3	viisil: 4
ette: 10	kellele: 6	meid: 6	oleks: 5	ristida: 11	ta: 66	viisil: 4
haigus: 3	kes: 26	meie: 3	oli: 32	ristimise: 5	tagasi: 20	välja: 8
hinge: 6	kinni: 4	metsades: 3	olla: 5	ristitud: 3	talvel: 3	välja: 8
hobune: 6	kiriku: 5	minema: 6	oma: 37	rootsi: 3	tampis: 3	ära: 20
hobuse: 9	kloostris: 3	mis: 9	omadega: 3	sa: 6	teda: 15	ära: 20

huntide: 3	kokku: 8	mitte: 10	on: 19	saab: 5	teekonna: 3	ühe: 6
i: 3	kolm: 3	mööda: 3	palju: 4	saadiku: 3	tema: 32	üksküla: 7
ilma: 7	kristlaste: 6	müürid: 3	palus: 5	saanud: 11	temalt: 3	ükskülasse: 6
isa: 11	kristuse: 4	nad: 33	pattude: 3	saata: 3	tere: 3	üle: 7

Table 18. The Total of Common Words

Grand total occurrences: 1495

As a result of finding the most common words in these three texts, we see that in the Jaan Jung's version the three most used words were ja : 65 (and), et : 25 (to), and ära : 15 (away/off), in Julius Mägiste's version the top three (four) counts were ta: 19 (he/she), aga : 11 (but), oma : 11 (own), nad : 11 (them), and for the Richard Kleis we see the following three counts: ja : 54 (and), ta : 23 (s/he), kui : 18 (if). The total of the occurrences marked in the tables per author can be expressed as following: Jung (573 occurrences); Mägiste (440 occurrences); Kleis (482 occurrences). The total of all of the listed out most common occurrences between the three authors is 1495 and the overall five most common words between the texts are ja : 147 (and), et : 70 (to), ta : 66(s/he), kui : 51 (if/when), oma : 37 (own).

4. Website

A website has also been created for this Master thesis, which includes an overview of the main information thesis and its results, together with illustrative material. It also serves as a personal portfolio showing my interests in the digital humanities and is divided into the following sections: Welcome, Project, Manuscript, Data, About.

The following information is collected in the corresponding pages:

- Welcome page for a quick welcome to the reader. (https://livonia.rarebook-ubfc.fr/welcome/)
- Project page introduces the goals of the thesis as well as its main chapters. (https://livonia.rarebook-ubfc.fr/project/)
- Manuscript page introduces the manuscript Heinrici Chronicon Livoniae as a physical object as well as its content. (https://livonia.rarebook-ubfc.fr/manuscript/). This section is divided into two parts:
  1) The Estonian translations – showing the corpus of the work.
  2) The Manuscript itself – giving and overview of the manuscript's preservation, translations and plot.
- Data page gives an overview of the data collected in the thesis and is divided into 4 sections (https://livonia.rarebook-ubfc.fr/data/).
  1) Transcription – containing Estonian and Latin transcriptions of the Richard Kleis version of the book.
  2) Word Frequencies – Tests tools for finding word frequencies, firstly, with Python, exploring the personal and place names, and secondly, with Voyant Tools exploring the word forms and correlations and lands and tribes.
  3) Comparative Word Analysis – uses tools to find common and unique words.
  4) Maps – uses mapping tools Google Maps and Kepler to create maps for visualisation.
- About page gives you information about the author of the page. (https://livonia.rarebook-ubfc.fr/about/)

The link to the webpage is the following: https://livonia.rarebook-ubfc.fr/

Conclusion

The results of this study highlight the prevalence of crusading related events throughout the Chronicle and their place of action's wide geographical distribution across the nowadays Baltic region. The data gathered with this work shows the significant number of ethnic groups as well as their contribution to fight for their beliefs, counteracting to the related events. In the absence of the original manuscript, substituted through existing copies and translations we get the idea of the manuscript but in this work the main attention has been given to the most important Estonian translations, paying attention to their linguistic and stylistic differences, and the ways these might affect their interpretation and general purpose. The collected data, along with the visualizations, illustrate the historical value of the Livonian Chronicle and the usefulness of contemporary digital tools for its analysis, showcasing the most easy-to-use tools for academical and everyday research.

This research indicates clearly that what began as the merchants' simple desire to send goods to the eastern shore of the Baltic Sea evolved into something far more transformative and can nowadays be divided into multiple different research areas and problems. The beginning of trade between East and West became a turning point for the entire Baltic region, bringing along religion conflicts, loss of life for many ordinary as well as important, and decades worth of territorial change for all. Alongside German immigration, the socio-political structure was reshaped by conquest and the transfer of knowledge from the West, guiding the development of local societies, but also with a grand sacrifice for the locals, possibly losing their own essence and purpose to grow in their previously intended authenticity and direction.

The mapping tools used for this work provided an opportunity to visualize these historical dynamics in an interactive way, offering further insight into the time and space movement. Comparatively, Kepler proved to be more technical, enabling the bulk uploading of datasets and the creation of complex animated geospatial visualizations, while Google Maps, was easier to use for simple mapping and navigation. Both tools have their place, yet for large-scale historical analysis and the visualisation of the results Kepler offers numerous advantages.

What we have today from the chronicle, remains as the ground to understand the medieval Baltic world and as Heinrici Chronicon Livoniae has not only preserved information about events in certain region but also stands as a historical artifact of significant bibliographical value, its preserved copies, translations, and continued preservation make it an important text for the study of medieval history and manuscript culture. That is also enhanced by the availability of translations in multiple languages making it more accessible to a diverse audience.

From today's perspective, the text gives us a structured summary of the events that took place in the beginning of wider trade activities in the east, the spread of social and religious network, but also the persistence of pagan traditions in the north-eastern area. While studying the content of the text, and trying to implement new technologies, practical experimentation tools proved themselves to be handy. Firstly, as for creating textual material, Google Lens produced the most accurate results of the two, comparing it with Transkribus. None the less, we cannot underestimate manual transcription as this might not be the fastest way but it sure is giving the most accurate results and it must also be used to control the other two previous ways of transcription. The outputs of used methods are presented in the annexes to illustrate their efficiency in particular textual tasks in language that are not so common for the tools themselves.

The previously created transcriptions also served as a base for further computational approaches which were used to gather data and test several known tools incorporating also now widely accessible artificial intelligence tools. In these tests multiple Python scripts were created to find word frequencies and to do comparative word analysis, and the creation of those was assisted by three different AI tools such as Grok, ChatGBT and Cursor from which one can conclude that the most technically accurate and working results were created by Cursor. Second most useful tool in this case was Grok, giving also seemingly accurate results with minor lacks and errors needed to be adjusted, and the third place goes to ChatGBT, which in general, did not prove itself to be the most useful tool out there to produce scripts due to the constant code streamline issues and invalid syntax it is creating, making itself rather useful for regular information gathering. However, the data gathering was not done only by previous means, but I also tested a common textual analysis tool Voyant Tools, which firstly helped me find word forms and their correlations, later visualising them as word clouds, and secondly, to find tribe and land frequency.

In total, ten digital tools were tested as each suited to specific research tasks and their results are found in the work as well in the annexes. Together the tools demonstrated the strengths and limitations of current digital humanities methods for the study of medieval texts through its translations, combining the expression of temporal-territorial activities, transcription possibilities, textual meaning and data study, as well as translation analysis. As of this, the thesis offers a multifaceted approach to Livonian Henry's Chronicle and highlights multiple possible future research pathways in the field.

References

Benoit, K. (2020). Text as data: an overview. In L. Curini, R. Franzese (Eds.), *Text as data: an overview* (Vol. 2, pp. 461-497). SAGE Publications Ltd. https://doi.org/10.4135/9781526486387.n29

Cambridge Dictionary. (n.d.). *Chronicle*. *Cambridge Dictionary*. Retrieved September 1, 2024, from https://dictionary.cambridge.org/dictionary/english/chronicle

EE. (2003). *Mõõgavendade Ordu*. *Eesti Entsüklopeedia.* Retrieved July 27, 2024, from http://entsyklopeedia.ee/artikkel/m%C3%B5%C3%B5gavendade_ordu1

EE. (2006). *Feodalism*. *Eesti Entsüklopeedia.* Retrieved July 27, 2024, from http://entsyklopeedia.ee/artikkel/feodalism2

EEVA. (n.d.). *Läti Henrik*. In V. Aabrams (Ed.), *Eesti vanema kirjanduse digitaalne tekstikogu*. Tartu University. Retrieved January 23, 2024, from https://utlib.ut.ee/eeva/index.php?lang=et&do=autor&aid=49

Henricus de Lettis. (1982). *Henriku Liivimaa kroonika* (R. Kleis, Trans.). Tallinn: Eesti Raamat.

Kaljundi, L. (2008). Henriku Liivimaa kroonika tõus rahvusvahelisele teadusareenile. *Tuna: Ajalookultuuri ajakiri, 2008(4)*, 141-144. https://www.ra.ee/wp-content/uploads/2017/01/KaljundiLinda_Henriku_TUNA2008_4.pdf

Kaljundi, L., & Tamm, M. (2022). Henry of Livonia. In S. Berger (Ed.), *Bloomsbury History: Theory and Method*. Bloomsbury. https://doi.org/10.5040/9781350915831.154

Kaljusaar, K. (2018, October 13). *The Teutonic Order in Medieval Livonia*. Tallinn Museum of Orders of Knighthood. Retrieved May 12, 2025, from https://tallinnmuseum.com/2018/10/13/the-teutonic-order-in-medieval-livonia/

Kiaupa, Z., Mäesalu, A., Pajur, A., & Straube, G. (1999). *Baltimaade ajalugu.* Tallinn: Avita.

ISIK. (2004). *Jung, Jaan*. *Eesti biograafiline andmebaas ISIK*. Retrieved 14 January, 2025, from https://www2.kirmus.ee/biblioserver/isik/index.php?id=980

ISIK. (2004). *Julius Mägiste*. *Eesti biograafiline andmebaas ISIK*. Retrieved 14 January, 2025, from https://www2.kirmus.ee/biblioserver/isik/index.php?id=2188

ISIK. (2004). *Richard Kleis*. Eesti biograafiline andmebaas ISIK. Retrieved 14 January, 2025, from https://www2.kirmus.ee/biblioserver/isik/index.php?id=1238

Mayring, P. (2000, June). *Qualitative Content Analysis. Forum: Qualitative Social Research, 1*(2), Art. 20. Retrieved 13 October, 2024, from https://www.qualitative-research.net/index.php/fqs/article/view/1089/2386

Roberts, C. W. (2000). A Conceptual Framework for Quantitative Text Analysis. In *Quality & Quantity* (Vol. 34, pp. 259-274). https://doi.org/10.1023/A:1004780007748

Saar, E. (2015, December). Julius Mägiste Eesti Ingeri läänemeresoome murrete uurijana. *Keel ja Kirjandus*, 12, 859-868. https://doi.org/10.54013/kk697a3

Smith, J. A. (2017). Textual Analysis. In J. Matthes, C.S. Davis, & R. F. Potter (Eds.), *The international encyclopedia of communication research methods*. Wiley-Blackwell. https://doi. org/10.1002/9781118901731.iecrm0248

The Editors of Encyclopaedia Britannica (2011, October 25). *Order of the Brothers of the Sword*. *Encyclopedia Britannica*. https://www.britannica.com/topic/Order-of-the-Brothers-of-the-Sword

Vahtre, S. (2001, March). Meie vanema historiograafia uurimisseisust ja ülesannetest. *Ajalooline ajakiri,* 3(114), 5-26. https://dspace.ut.ee/server/api/core/bitstreams/b5c90344-58a8-4271-813b-b4b1ecf3b04b/content

Tables

Table 1. The Counts of Battles and Baptizing Events Mentioned on the Google Maps Map. 22
Table 2. The Dataset for Kepler ..... **Error! Bookmark not defined.**
Table 3. The Bibliographical Overview of the Manuscript 27
Table 4. The Common Words on VT 45
Table 5. The Most Common Words on VT 46
Table 6. The Tribe Names 48
Table 7. The Tribe and Land Mentions in Estonian 50
Table 8. The Tribe Names and Mentions in Latin 51
Table 9. The Counted Personal Names in Estonian 56
Table 10. The Count Amounts in Estonian 56
Table 11. The Counted Personal Names in Latin 58
Table 12. The Count Amounts in Latin 59
Table 13. The Combined Counts 60
Table 14. The 30 Most Mentioned Latin Place Names 69
Table 15. The Unique Words Counted by Their Starting Letters 81
Table 16. The Common Words of Jaan Jung 91
Table 17. The Common Words of Julius Mägiste 93
Table 18. The Common Words of Richard Kleis 94
Table 19. The Total of Common Words 96

Figures

Figure 1. The Creation of a New Map on Google Maps 16
Figure 2. The Localisation of Battles and Baptizing on Google Maps 17
Figure 3. The Locations on the Map 21
Figure 4. The Visualization of the Finished Map on Kepler 24
Figure 5. The Maps Interaction with the User 25
Figure 6. The Creation of Cirrus 41
Figure 7. The VT Latin version, 25 words 41
Figure 8. The VT Latin version, 50 words 41
Figure 9. The VT Estonian version, 25 words 42
Figure 10. The VT Estonian version, 50 words 42
Figure 11. The VT Estonian version, 25 words 43
Figure 12. The VT Estonian version, 50 words 44
Figure 13. The Voyant Tools for Frequency 47

Tools Used

Google Lens

Python

Transkribus

Voyant Tools

Google Maps

Grok

ChatGBT

Cursor

Kepler

Annex 1

The results file for the Latin place name frequency test:

https://docs.google.com/document/d/1nTcl1HJ57r4EfhxXQFYGTPUd-GbtKPxlp9ApYX20HU0/edit?tab=t.0

Annex 2

Transkribus transcription test in Latin:

https://docs.google.com/document/d/1nTcl1HJ57r4EfhxXQFYGTPUd-GbtKPxlp9ApYX20HU0/edit?tab=t.hrnam5q8u3xu

Annex 3

Transkribus transcription test in Estonian:

https://docs.google.com/document/d/1nTcl1HJ57r4EfhxXQFYGTPUd-GbtKPxlp9ApYX20HU0/edit?tab=t.un2o3t2mdahq

Annex 4

Google Lens transcription test in Latin:

https://docs.google.com/document/d/1nTcl1HJ57r4EfhxXQFYGTPUd-GbtKPxlp9ApYX20HU0/edit?tab=t.t6q9v7511l07

Annex 5

Google Lens transcription test in Estonian:

https://docs.google.com/document/d/1nTcl1HJ57r4EfhxXQFYGTPUd-GbtKPxlp9ApYX20HU0/edit?tab=t.iy91mqdwewg8

Annex 6

Manual transcription test in Latin:

https://docs.google.com/document/d/1nTcl1HJ57r4EfhxXQFYGTPUd-GbtKPxlp9ApYX20HU0/edit?tab=t.zi98sdcp792z

Annex 7

Manual transcription test in Estonian:

https://docs.google.com/document/d/1nTcl1HJ57r4EfhxXQFYGTPUd-GbtKPxlp9ApYX20HU0/edit?tab=t.68fhpo947gdj

Annex 8

The Estonian transcription of the Kleis's book:

https://docs.google.com/document/d/1nTcl1HJ57r4EfhxXQFYGTPUd-GbtKPxlp9ApYX20HU0/edit?tab=t.3y2wrwrj1ux8

Annex 9

The Latin transcription of the Kleis's book:

https://docs.google.com/document/d/1nTcl1HJ57r4EfhxXQFYGTPUd-GbtKPxlp9ApYX20HU0/edit?tab=t.ddehjnywqpgi

Annex 10

The most common 50 words in Liber Primus Latin version:

1	vite	5	**16**	pater	3	**31**	simili	2	**46**	lyvoniam	2
2	episcopus	5	**17**	fratrem	3	**32**	secundo	2	**47**	lyvonia	2
3	meynardus	4	**18**	equi	3	**33**	sacerdos	2	**48**	holmenses	2
4	mercatorum	4	**19**	episcopo	3	**34**	revertitur	2	**49**	gothlandiam	2
5	lyvonum	4	**20**	diem	3	**35**	proxima	2	**50**	gothlandia	2
6	lyvonibus	4	**21**	consilio	3	**36**	proposito	2			
7	lyvones	4	**22**	baptismum	3	**37**	promiserant	2			
8	frater	4	**23**	accepta	3	**38**	primitus	2			
9	fidem	4	**24**	ykescolam	2	**39**	preponit	2			
10	episcopum	4	**25**	villa	2	**40**	prefatum	2			
11	castro	4	**26**	vicini	2	**41**	pollicetur	2			
12	theodericum	3	**27**	thoreyda	2	**42**	pertinacia	2			
13	terram	3	**28**	thoreida	2	**43**	pars	2			
14	primus	3	**29**	theuthonicis	2	**44**	pagani	2			
15	pedem	3	**30**	tempore	2	**45**	opus	2			

Annex 11

The most common 50 words in Liber Primus Estonian version:

1	vastu	10	**16**	maha	5	**31**	üle	3	**46**	järgmisel	3
2	vend	8	**17**	ette	5	**32**	theoderici	3	**47**	hobuse	3
3	tagasi	7	**18**	aga	5	**33**	seepärast	3	**48**	hinge	3
4	liivlased	7	**19**	võtavad	4	**34**	ristitakse	3	**49**	ennast	3
5	pärast	6	**20**	tuleb	4	**35**	ristida	3	**50**	ajal	3
6	kes	6	**21**	teda	4	**36**	peale	3			
7	võtnud	5	**22**	mis	4	**37**	olid	3			
8	ülalnimetatud	5	**23**	maalt	4	**38**	nagu	3			
9	usu	5	**24**	linnuse	4	**39**	minema	3			
10	siis	5	**25**	kuid	4	**40**	meynard	3			
11	see	5	**26**	kaupmeeste	4	**41**	linnus	3			
12	seda	5	**27**	jumala	4	**42**	liivlaste	3			
13	saanud	5	**28**	isa	4	**43**	koos	3			
14	piiskop	5	**29**	välja	3	**44**	kokku	3			
15	nende	5	**30**	vahepeal	3	**45**	keegi	3			

Annex 12

The result of Latin personal name test:

https://docs.google.com/document/d/1nTcl1HJ57r4EfhxXQFYGTPUd-GbtKPxlp9ApYX20HU0/edit?tab=t.mlorqluvyqc8