Linnæus University
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[MA Thesis: The Nordic Odyssey]

[*Homer's Epic Poetry and the Norse Sagas*]

[*A comparative analysis supported by digital text analysis*]

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Abstract

This thesis compares Homer's *Odyssey* and *Iliad* with the Norse Sagas, the *Young* and *Elder Edda.* More specifically, it analyses, whether the *Odyssey* and *Iliad* should indeed derive from the Norse Sagas, which is a claim brought forth by Felice Vinci. Throughout the thesis, passages, sentences and words from both the Greek and Norse texts have been singled out through the process of text analysis tools from Python and Orange3. Similar passages or words from both texts were filtered out by building a program that would print sentences with given key words. These were then analysed and studied, in order to compare the texts to each other and for the most part, to see if the Greek texts should indeed have derived from the Nordic texts. Finally, no proof has been found that the Norse Sagas should have predated the Greek Myths. However, this was a very interesting theory, that I am glad to have examined.

Key words

Digital Humanities, Homer, The Odyssey, Norse Sagas, Migration of Myth, Python, Text analysis

Acknowledgments

First of all, I would like to thank Felice Vinci for his great endeavours of trying to display a northern heritage to the *Odyssey* and *Iliad*. Especially through his way of mapping Ulysses ten-year long trip from Troy back to Ithaca and trying to find geographical, cultural and historical clues that could indicate a northern origin to the great epic poems.
I would also like to thank the national Danish Broadcasting service DR for making a very interesting podcast *The Nordic Odyssey* and laying out the work of Vinci in a very creative and capturing way. Finally, I would like to thank my supervisor Dan Kohen-Vacs and examiner Jukka Tyrkkö for inspiration and support.

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1 Introduction

Homer's two epic poems, the *Iliad* and the *Odyssey* - many have read it, almost everybody in the western world has heard about it. The tales of Odysseus, the king of Ithaca, are an essential part of the Greek and western cultural and literature heritage and have a been key inspiration for a wide number of authors throughout time, like Dante Alighieri, James Joyce and Margaret Atwood. But what if this magnificent story and Greek literal landmark never occurred in the Mediterranean, but Nordic waters and lands? This is a theory that has been argued by hobby historian Felice Vinci. Could he be right?

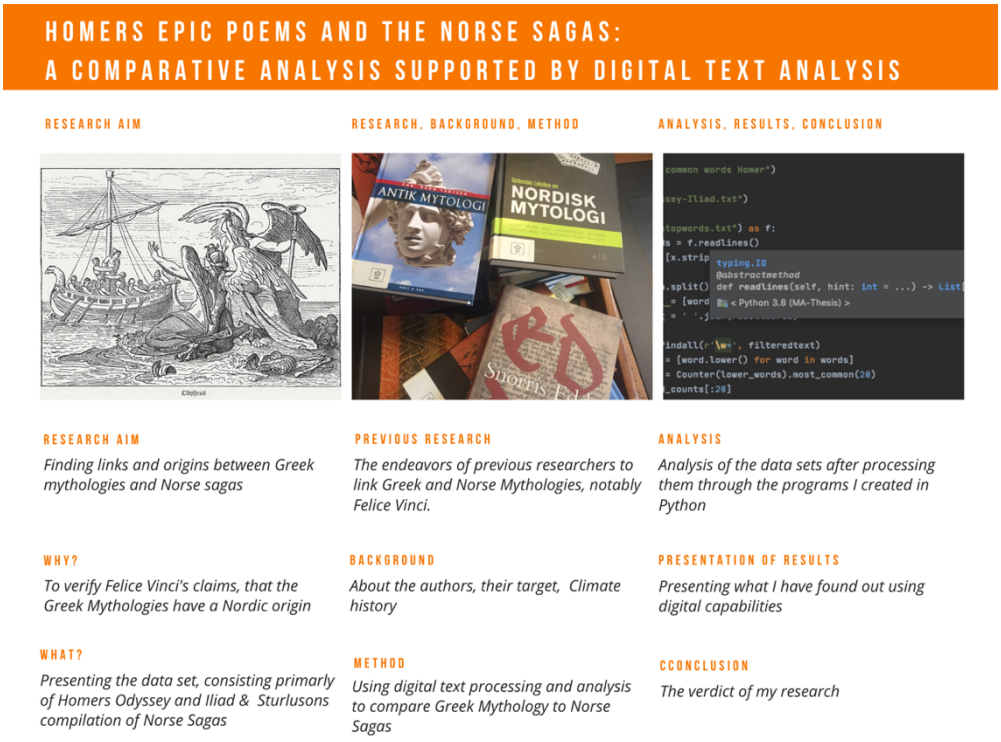
Being Danish, but growing up abroad, I have always sought to Danish literature, in order to keep a connection with my Nordic heritage. From a very young age, I developed an interest in Nordic mythology and for my eight birthday, I was given a book with a collection of all the Nordic mythologies collected by Niels M. Saxtorph. Simultaneously, the Disney movie *Hercules* was shown in movie theatres in the 1990's and thus my interest in Greek mythology was also sparked. However, this interest faded away at some point, until I stumbled upon the podcast *Den Nordiske Odyssé* (eng: *The Nordic Odyssey*) by the Danish public broadcasting service in 2020. The podcast was based on the research of hobby historian Felice Vinci (who is first and foremost a nuclear energy researcher from the University of Rome), who claims, that the Greek mythologies, actually stem from the Norse sagas, which, according to Vinci, were brought from the north to the south (Vinci 2006). Vinci talks about the so-called *Migration of Myth* and comes with many indicators, such as geography, topography, climate, clothing, food, religion, etc. which supposedly indicate a northern heritage (Vinci 2006).

Stumbling upon Vinci's research coincided perfectly with the timing of me starting this Master in Digital Humanities, so I decided to take Vinci's research a step further, by using programming tools, such as text processing and text analysis, to gain more knowledge about the Greek mythologies and Norse sagas. Using Python, and Orange3 I want to scan Homers epic poems for cultural clues, climate, vegetation, descriptions of clothing and tools and compare them with Snorri Sturluson's *Young Edda* and the *Elder Edda* (whose author is unknown, but sometimes attributed to Sæmundr The

Learned) – a compilation of the Norse Sagas. With these machine capabilities for text processing and analysis, I aspire to find origins and links between the Greek and Nordic poetic tradition and maybe, as claimed by Vinci, to uncover the Nordic origins of the Homeric poems.

Story board

In order to get a brief overview of my approach to answering these questions, I have created a small story board:



2 Research approach

With this thesis, my aim is to find links between the Greek mythologies and Norse sagas, backed by machine learning capabilities, such as text processing and text analysis. I want to do this, because I find Felice Vinci's claim, that the Homer's *Odyssey* and *Iliad* were supposedly inspired by a northern cultural tradition very intriguing. Therefore, I want to go get to the bottom of Vinci's claims and track possible links and origins between Greek Mythology and this northern tradition, by using different libraries in Python and Orange3 in order to create programs, that can process and analyse these two large data sets. Seemingly, Vinci's approach has been a very analogue approach, and as far as I have found out so far, no digital effort has been done to support his claim. I think, that using this kind of machine learning for humanistic research is valuable, as large data sets can be examined quite quickly, and can further help us understanding our literary history. My thesis will focus on Homer's *Odyssey* and *Iliad* and will compare these two texts to Snorri Sturluson's *Young Edda*, and the Sæmundr's *Elder Edda* a compilation of the Norse Sagas. I think it's necessary to analyse and challenge Vinci's theory, because, if he would indeed be right, this would be a major discovery that could change our perception of history.

Questions

My research aim can be summarized in two questions:

1. Is there a link in terms of storyline between the Greek mythologies and Norse Sagas ?

2. Do the Greek mythologies indeed derive from a northern tradition?

3 Previous Research

Since ancient times, the works of Homer have been read and discussed, but really only in the 19th century, the so-called *Homeric Question*, consisting of a number of sub questions, saw the light. Scholars started posing questions like:

- Who was Homer?
- Did the *Iliad* and *Odyssey* have a single author?
- What was the relation between the *Iliad* and the *Odyssey*
- When and under which circumstances did the epics originate?

(Morris, Powell, 1997)

One of the first and most prolific studies on the identity of Homer and whether the *Odyssey* and the *Iliad* were composed by the same author, was the German philologist Friedrich August Wolf (1759-1824). Wolf stated, that while the epics exist, it was uncertain that Homer ever existed (Morris, Powell). Later on, studies by German philologist Karl Lachmann (1753-1851) further concluded, that the *Iliad* was indeed a collection of eighteen separate tales, which had later been assembled into one under by the ruler of Athens Pisistratus (600 BC- 527 BC), (Morris, Powell 1997). At approximately the same time, another German philologist G. Hermann (1772-1848) was arguing, that there had existed an original Homer who had composed the original *Iliad* and *Odyssey*, but which had later been altered and expanded upon by other poets (Morris, Powell 1997).

As of 2022, Homeric studies have not reached their end, and it is doubtful, if there will ever be a definitive edition and interpretation of the *Iliad* and the *Odyssey* (Morris, Powell 1997).

Homeric studies are plentiful and there are too many to name in this thesis. However, no serious academic studies which raise the question of there being a northern heritage to the *Iliad* and *Odyssey*.

The most prolific study I have found on this subject are the two works of the Italian hobby historian Felice Vince, the first one being *The Baltic origins of Homer's epic tales: the Iliad, the Odyssey, and the migration of myth* from 2006, followed by the subsequent *The Nordic Origins of the Iliad and Odyssey* in the Athens Journal of Mediterranean Studies from 2017, where he quite thoroughly describes the supposed Baltic and Nordic origins of the *Iliad* and the *Odyssey*. As far as I have found out, both these works have followed a similar research approach, where Vinci has been outlining certain paragraphs and scenes from both Homers tales, which could be linked to a Nordic heritage.

I have not been able to find any previous research that has programming in order to create codes and programs to study neither the claims of Vinci, have used programming for comparative analysis between the Norse Sagas and Greek Mythologies.

4 Data Set

I have through Project Gutenberg been able to download a plain text versions of Homer's *Odyssey* and *Iliad*, as well as *Snorri's Edda* and the *Elder Edda* .

The text version that is used of *The Odyssey* is a translation from ancient Greek into English from 1900 by Samuel Butler. It was turned into an ebook by Project Gutenberg in 1999.

The ***Odyssey*** version downloaded as plain text from Project Gutenberg is the following:

```
Samuel Butler: The Odyssey, by Homer. Rendered into English
prose for the use of those who cannot read the original. 1900

Link: https://www.gutenberg.org/cache/epub/1727/pg1727.txt
```

The text version that is used of *The Iliad* is a translation from ancient Greek into English from 1900 by Alexander Pope. It was turned into an ebook by Project Gutenberg in 2002.

The ***Iliad*** version downloaded as plain text from Project Gutenberg is the following:

```
The Iliad of Homer Translated by Alexander Pope. With Notes
and Introduction by the Rev. Theodore Alois Buckley, M.A.,
F.S.A. and Flaxman's Designs.1899

Link: https://www.gutenberg.org/cache/epub/6130/pg6130.txt
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The text version that used of ***Snorri's Edda*** is a translation from 1901 from Norse into English by Rasmus B. Anderson. It was uploaded as an ebook by Project Gutenberg in 2006 as a plain text version. The ***Elder Eddas*** of Sæmundr Sigfusson was from the Original Old Norse Text into English by

Benjamin Thorpe in 1899. Link to both:
https://www.gutenberg.org/files/14726/14726-h/14726-h.htm

By using Python and Orange3, I will process the whole text and scan it for relevant buzzwords relating to geography, climate, clothing, food, culture, religion, customs and others factors, which could indicate Nordic roots of this epic tale.

For this project, it seemed very obvious to use the text data provided by Gutenberg, as Gutenberg is a very familiar and respected platform, and because it provided all the data necessary for my project. As I intend to use the plain text (in English) from Gutenberg's platform as my only source for text processing, I would think that specific limitations to this dataset, would be lack of my ability to compare the translated texts to their original language (ancient Greek and Icelandic).

It is also important for me to state, that other than the digital text processing used on the core texts, I first eliminated all surrounding information irrelevant to the core text. This means that I deleted information, such as copyright, publishing, translators, forewords, etc. which is information that varies from publisher to publisher and has nothing to do with the body of the text.

Furthermore, as I unfortunately neither have in depth knowledge about the ancient Greek or Icelandic language, I had to choose English translations of all texts that I analysed. The reason for choosing the texts published on Project Gutenberg, was that Gutenberg has proven to be a reliable digital source for ancient texts.

5 Methodology

As stated in Schuster and Dunns *Routledge International Handbook of Research in Digital Humanities*, the method is the tool and the methodology the rationale behind using a said tool (Schuster & Dunn 2020). The method I have chosen to use, I will mainly use the method text analysis (text mining) to find out, how the geography, climate, customs etc. are described in Homers epic poems. However, before being able to apply text analysis, the texts themselves have to undergo a practise called text processing. Text processing consists of cleaning the texts and change them into a more usable format (https://monkeylearn.com/text-analysis/). This will for example be to

transform all words to lower case, in order to remove duplicates, and rinse the text from so-called ‘’stop words’’ (fx. ‘’a’’, ‘’and’’, ‘’because’’ etc.)

In terms of programming, text analysis is a machine learning technique that allows us to scan a large amount of text data. It can for example be used to search for key words, topics, names and other kind of information. In that sense, text analysis delivers qualitative results. The benefit of text analysis, is that it is scalable, meaning, that it can help us structure vast amounts of information within a few seconds in real time (https://monkeylearn.com/text-analysis/). Also, when applying text analysis through computing, it delivers consistent results, whereas manual text analysis is more prone to error.

The rationale, or methodology behind using text analysis, is that I am working with a strictly textual dataset, and for this purpose, proves to be the most straight forward when it comes to diving into the literary universe of Homer, and further examine, how he describes this universe. The advantages of text analysis are, that it’s a very thorough and close reading method, where one dives deep into the text, and is able to read between the lines and find hidden or overlooked aspects of the text in question. However, the disadvantage of text analysis is, that it is not a hard science, and that the results can be fluid and subject to change over time (Schuster & Dunn 2020).

For my text processing and analysis, I will use libraries in Python, such as the Python Standard Library, as well as dash, pandas and matplotlib.

More specifically, I will create various programs in Python to support my text analysis efforts, in order to search for links and relations between the narratives. These programs include:

- Word frequency: Scanning for most common words (and how often they appear)
- Text extraction: Displaying the sentences and lines where certain words appear
- Data visualisation: Graphical representation (e.g. bar charts, scatter plots)

(Maruch 2006)

Moreover, I will also be using Orange3, which is a program with build in functions such as word cloud, text analysis, text processing and graphic visualisation.

However, I will mainly be using Python, because I would like to build my own text analysis programs, in order to hopefully get a better understanding, of how such programs operate.

6 Literature Review

In this chapter, I will go through the literature that will provide the basic data for my master thesis.

6.1 Myth vs Saga

Before commencing on this Odyssey of my own, I'll start by briefly outlining the differences between myths and sagas. This is important in order to understand the kind textual data set we are working with.

6.1.2 Myth

Myth derives from the Greek *muthos,* which encompasses, what is told about, opposed to *ergo,* what is done (Clover & Lindow 2005 p.21). In the oldest of Greek literature, *muthos* essentially meant *word.* Later on, the Greeks refined the word myth to legend or even fiction in contrast to historical account, much like its popular usage and meaning today. The term myth has mostly been connoted with stories about gods or supernatural beings. According to John Lindow, myths will from a Christian point of view always be deemed untrue (Clover & Lindow 2005 p.21).
Homers myths can be placed within three different groups: The Myths about the Trojan War, myths about gods and heroes and myths that are not directly dealing with the Trojan War (Graf 1993 p. 59).

6.1.3 Saga

The word saga is used as an umbrella term for epic Icelandic prose during the middle ages. Sagas often includes a wide variety of people and actions which are tied together, even though there also exist shorter sagas with only focus on one specific conflict (Lassen 2017 p.9). The Icelandic word saga is related to the old norse verb *segja,* meaning, ''to say''. Unlike the Greek term

‘’myth’’ saga does not differentiate between historical accounts and fiction (O’Donoghue 2004 p.22). *Saga* is both used for past and current happenings, even though it is mostly used to describe what happened in the past. Sagas convert the happenings into stories, which are then transmitted orally (Sørensen 1993 p.34).
The old Norse Sagas are believed to have had meanings relating to the human social organisation and shows similarities between the hierarchy of the supernatural beings in the Norse mythic world and of the Icelandic society. Also, many of the feuds between the gods and giants are supposed to reflect the different feuds between the various bands under the different chieftains (Ross 2009 p.122).

In this thesis, I am analysing Norse Sagas, which may also include so called ‘’true myths’’. According to Clover and Lindow, eddic poems largely gives us tales about the gods, such as Voluspá, Hávámal, Grímnismál, Skírnísmál, etc... These poems vary in tone, perspective and the way they are presented, ranging from comedic to tragic and therefore need to be examined individually (Clover & Lindow 2005 p. 29). Eddic poems are considered vastly important to study Scandinavian mythology, as they are believed to have been composed during the pagan period and to have been transmitted unchanged until their recording in the thirteenth century (Clover & Lindow 2005 p.29). However, it is impossible to prove, if the poems have undergone change or not, as they were only written down hundreds of years after Christianity had been ruling the Nordic countries and no Scandinavian written texts are left behind for comparison.
It is widely believed, that the word *Edda* comes from the Latin verb *edo,* which means, to compose poetry (Ross 2005 p. 160).
In its form, the *Edda* poems are relatively short and were meant to be easily memorized and orally transmitted.

7 Background

Before getting into the data set, I would like to give a brief overview of the surrounding elements of our texts. First, I’ll take a closer look at the authors, the dating of the texts and a brief overview of climate history, which is going to be an important factor while diving in to the textural landscape.

7.1 The authors and their target

In order to understand the content of our data set, it is also important to get to know the authors as well as their audience.

7.2 Snorri Sturluson (1179-1241)

Snorri Sturluson compiled the most well-known Sagas nowadays known as the *Younger Edda,* the *Prose Edda* or simply *Snorri's Edda.* As the term *Prose Edda* suggests, Snorri compiled and wrote the Sagas in a prose form.

Before understanding the target audience of Snorri, we first need to know a bit about Snorri himself. Snorri Sturluson lived from 1179 until 1241 and was an Icelandic Christian, historian, poet and politician (Lembek & Stavnem 2012). Most of the old Norse sagas may not have been known, or at least not as fully transmitted to us, had Snorri not collected all the sagas in written form. According to professor Clunies Ross, we can go as far as to say, that Norse mythology as we have come to know it, is largely a the work of Snorri (Ross 2009, p. 128).
There are different beliefs, as to why Snorri compiled the Nordic sagas in the first place. Ross assumes: ''that Snorri wrote in part to revive what he may have perceived as a flagging or ill-informed interest […] among your Icelanders of his day''. However, Ross also argues, that this alone cannot have been the motivation for Snorri, but that he also had a deep interest in the Norse sagas. He might however also have had his own selfish motivations, like for example representing himself as a skilful writer and a scholar as a means to gain influence in the Norwegian court (Ross 2009 p. 129).

However, there are also studies stating, that instead of demonising or even banishing the old Norse gods, the northern Christians from Iceland, Denmark, Norway and Sweden, chose to give the Sagas a prominent role in history. By doing so, a mythological history, similar to that of the Roman Empire, was created (Lembek & Stavnem 2012). Some researchers even go as far to say, that many of the Norse sagas, were in fact rewritten mythologies of the Trojan wars, know from the Iliad. There even exists an early Norrøn (medieval Icelandic) version of Homers Iliad, known as the Trójumanna Saga, or ''the Saga of the people of Troy'' (Lembek & Stavnem 2012).

When dealing with the Norse sagas, it is important to stress the fact that Snorri was Christian, so that his perspective on the Sagas would most likely also have been a Christian one (Lembek & Stavnem 2012). Therefore, we can't exclude the possibility of Snorri's versions to alter from the original Nordic ones. It is also important to note, that those sagas were only written down more than 100 years after the Nordic countries had converted to Christianity and, at least the public practice, of Norse mythology had stopped (Lembek & Stavnem 2012). Therefore, time will also most likely have altered the tales. Sturuluson may also purposely have altered the tales to fit better into a Christian narrative (Ross 2009 p.131). Therefore, important details may have been edited or completely left out. Snorri may also have been composing some of his own poetry and thus added material to the sagas. Therefore, we cannot with 100% trust Snorri to have given the after world an accurate transcription of the Norse sagas (Ross 2009 p. 131).
It is believed that the Edda poems were largely aimed at, and favoured by the lower social classes. The eddas mostly centre around the adventures of Thor slaying giants and tales of fertility, whereas the skaldic poems were more focused around Odin, the god of poetry, and his wisdom.

Snorri's sources have been tracable mainly to the skalds Bragi Bodason, Eilíffr Godrúnarson, Úlft Uggason, Pjódólfr of Hvin from the late tenth century (Clover & Lindow 2005 p.40). However, the question to as if Sturluson had any access to any written material while composing the eddas in the 1220s is still open (Ross 2009 p.124).

While the *Younger Edda* is attributed to Snorri, it has been more debated, who compiled the stories of the *Elder Edda.* However, since the Iceland bishop Brynjulf Sveinsson in 1641 claimed that Sæmundr Sigfússon The Learned was the author of these stories, these have sometimes in the past been attributed to Sæmundr, even though most scholars today reject this idea (Stavnem 2018).

7.3 Homer

Even though the *Odyssey* and the *Iliad* are two of the most widely read and celebrated works of literature, we almost don't know anything about their author or even authors, or when exactly those stories originated. Many scholars believe, that the two epic poems were indeed composed and altered by many different poets over centuries (Tortzen 2004).

To historically place Homer is difficult, but it is believed that Homer was an oral poet and bard who was born ca. 750 B.C and was a citizen of Ionia, of ancient Greece (Tortzen 2004). The first known manuscripts were indeed for the most part composed in the ionic dialect.

Even though the *Iliad* and *Odyssey* are considered mythologies and are characterised by supernatural occurrences, they also to some degree reflect early human society. For example, when Aristoteles in his lectures was trying to explain, how life outside of society would look like, he would turn to the myth of the Cyclopes, where there was no order, rights and laws (Tortzen 2004). The myths were in that sense not only used as entertainment, but also as reference points, as to why, certain things were the way they were.

7.4 Dating the Greek and Norse mythologies

Generally, the Greek mythologies are dated to have originated around 1200 BC, and with being written down by the likes of Homer and Hesiod around 700 BC (Tortzen 2004).

But if we are to believe Vinci, the Norse sagas are supposed to have originated earlier than the Greek mythologies. It has however proven to be much more difficult to exactly date the Norse mythologies, since the written tradition only started around the 2 century AD in the North. In Scandinavia, it started in form of runes, later changing to the Latin alphabet around 100 AD. As a consequence, the Nordic mythologies were only written down by Icelandic and Christian scholar Snorri Sturluson around 1220 – more than 100 years after the extinction of the practices of the Norse religion (Clover & Lindow 2005).

Though it is difficult to accurately date the Nordic sagas, due to the lack of physical evidence, either in form of writing, monuments or similar, it is however widely accepted that the Greek mythologies predate the Norse sagas by hundreds of years. The reason for their similarity is believed to be from their distant cultural cousins: The Proto-Indo-Europeans.
It is historically commonly agreed, that most European cultures today stem from The Proto-Indo-European culture, which is most commonly placed in the bronze age between 4500–2500 BC (Ramat & Ramat 1998). According

to the prevailing Kurgan hypothesis, the PIE culture and language originated around the Pontic-Caspian steppe close to the Black Sea, which today is classified as eastern Europe (Ramat & Ramat 1998). Most scholars argue, that the different European languages, religions and cultures, including mythologies, derive from an ancient PIE spring, which overtime, due to travels and migration, was spread throughout Europe (Ramat & Ramat 1998). Having taken place during a time of oral transmission of knowledge and culture, the languages and also the cultures changed over time as they were adapted by the different settlers throughout Europe and east Eurasia.

7.5 Climate history

In order to give potentially shine some light as to why there is a frequent mentioning of snow and ice in Homers universe, I present a small excerpt of climate history:

Holocene Climatic Optimum
8000-7000 BCE RECENT PRE-BOREAL: Climate is still cold. Red fir alder and hazel trees spread
7000-5000 BCE Boreal: Warm summers, mild winters
5000-3000 BCE Atlantic: Mild and humid winters. Spreading of Oak trees

Subboreal
3000-500 BCE Climate gets colder. Beech and fir trees survive

When the last vast ice age ended in Europe around 12.000 years ago, the temperature gradually increased and peaked between 4000 and 2000 B.C. This was then followed by another five years of decrease in temperature, which resulted in a change in vegetation, farming and lifestyle, which cause many inhabitants in Scandinavia to move more south. Vinci describes, how one tribe, known as the Achaeans, reached the Peloponnese islands and founded the Mycenaean civilization (Vinci 2006).

As Vinci puts it, when the climate started getting colder around 2000 BC, the northern population started migrating south, some of them eventually ending up in the warmer Mediterranean areas and their stories migrated with them (Vinci 2006). This would according to Vinci explain the occurrence of many northern traits, ranging from fauna, to clothes and food etc. However, this

could also be due to that same ice age that was going on in Europe at the time.

8 Analysis and results

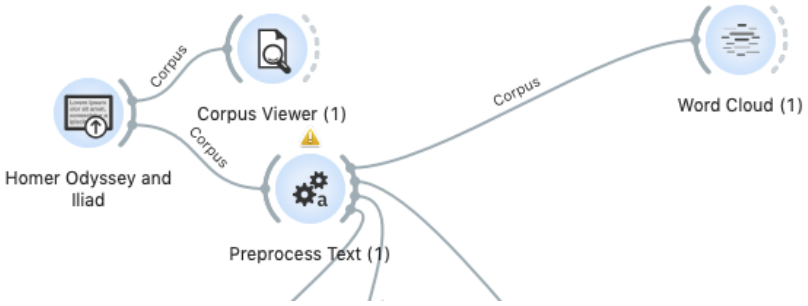
In this section, I will present the computational methods I used, in order to process and analyse my data set.

8.1 An overview of the most common words between Homeric epics and Norse sagas

First off, I would like to present and overview of the most common words appearing in respectively Homers' poems and the Norse sagas. This is on the one hand, in order to get an overview of the main theme of the texts and on the other hand, a first step in finding similarities between the two data sets.

8.1.2 The *Iliad* and *Odyssey*

Starting with Homers texts, I would like to present a word cloud containing the most common words. This I have done using Orange3. First I uploaded the text files in Orange3, then after processing the texts, i.e. eliminating stop words and setting all words to lowercase I was able to create a word cloud.



Looking at the word cloud, we can get a quick idea of the storyline, main themes and happenings of Homers two poems. In the middle we see words like god, jove (zeus), heaven, soul, father, king, war, power, kill, brave, hero, ulyss(es), hector, troy, ship, sea, came, went, fate, etc.

In order to get an overview of the most common words and how many times certain words occur, I wrote the following line of code in Python:

```
f=open("Odyssey-Iliad.txt")
a=f.read()
with open("stopwords.txt") as f:
    stopwords = f.readlines()
stopwords = [x.strip() for x in stopwords]

allwords = a.split()
resultwords  = [word for word in allwords if word.lower() not
in stopwords]
filteredtext = ' '.join(resultwords)

words = re.findall(r'\w+', filteredtext)
lower_words = [word.lower() for word in words]
word_counts = Counter(lower_words).most_common(50)
top50 = word_counts[:50]

print(top50)
```

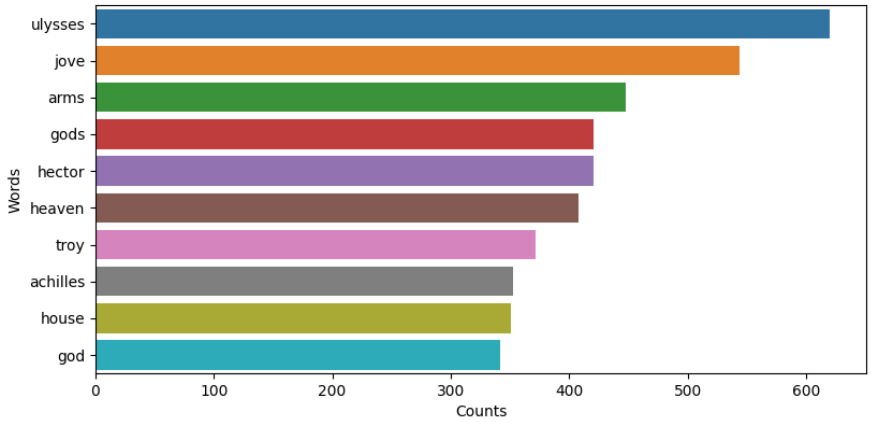
In the end, I ended up with the following result:

Top 50 most common words	
ulysses : 626	home : 220
jove (Zeus): 465	suitors : 218
arms : 432	spoke : 217
gods : 431	good : 217
house : 370	head : 216
heaven : 353	old : 216
hector : 335	fate : 214
god : 327	far : 210
went : 319	death : 208
troy : 315	force : 206
hand : 304	left : 204
war : 286	dead : 202
long : 285	away : 201
came : 281	plain : 201
achilles : 279	greece : 201
chief : 266	greeks : 195
father : 264	people : 192
eyes : 263	brave : 190
king : 255	vain : 188
hands : 236	heart : 187
telemachus : 233	know : 186
fight : 233	fair : 186
ship : 223	rage : 184
trojan : 222	sea : 182
took : 221	minerva : 182

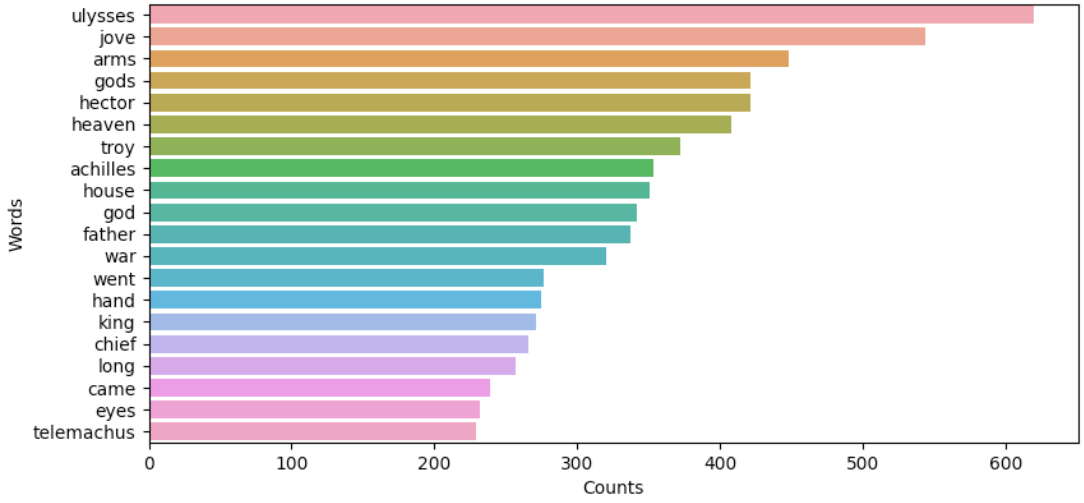
In order to present these results in a more visual manner, I also wrote a line of code that would give me a graphic of the most common words. In this case, I opted for a bar chart:

```
print("2.1: Barchart of the most common words in Homer:")

common_words_homer =
frequent_homer_word_counts.most_common(10)
common_words_homer = pd.DataFrame(common_words_homer, columns=
['Words', 'Counts'])
plt.figure(figsize=(2,2))
sns.barplot(y="Words", x="Counts", data=common_words_homer)
plt.show()
```



Another variation with the 20 most common words:



I would say, that these words could be placed in four main categories:

Relations: Father, mother, brother, daughter, suitor, love, wife, friend.
Power: War, power, kill, fight, brave, hero, force, honour, dead, death, chief, etc.
Journey (The long travel of Ulysses from Troy back to Ithaca): Troy, ship, water, sea, came, went, home, etc.
Religion: God, goddess, heaven, soul.

This quite quickly sums up the story of our brave hero, Odysseus who honourably in a war, kills many men, and emerges from the battle a hero. However, when he and his men are bound to return from Troy to Ithaca, they have to cross many seas with their ships and overcome a lot of danger and obstacles. Also, the gods are omnipresent in our story, some of them fighting against Ulysses to make his return home even more difficult.

8.3 The *Young* and *Elder Edda*

Similar to the paragraph above, I will use the same computational methods to extract the most common words from the Norse sagas, starting with a word cloud made in Orange:

Relations: Father, brother, mother, daughter, wife.
Religion: God, Thor, Odin, heaven, soul.
Knowledge/ meaning: Ask, Answer, told, thought, think, wise, mind
Power struggles: Sword, Hammer, Power, Oath, Blood, death, honour.

However, we also see words that indicate mythical beings, such as dwarfs, giants as well as animals, such as wolfs, horses, serpents. We also see that

women play a relatively big role in the northern mythologies: Freya, daughter, woman, women, sister, wife, maid, brynhild, etc.

When looking at the most common words from the Nordic sagas, the gods seem to be more important to the tales, than humans. We have words like God, Odin, Frey, Æsir, Loki, and Thor that again indicate that the gods are the main actors in the Nordic mythologies, as opposed to the Odyssey and the Iliad, where it is humans, like Ulysses, Hector and Achilles that are in the centre.

Here is a quick outline of the most common words in the Norse sagas:

('gods', 166), ('king', 166), ('sigurd', 162), ('sons', 156), ('know', 145), ('thor', 137), ('æsir', 133), ('odin', 126), ('came', 123)

To get a list of the main words, and how often they appear, I once again opted for a word counter in Python.

```
f=open("NorseSagas.txt")
a=f.read()
with open("stopwords.txt") as f:
    stopwords = f.readlines()
stopwords = [x.strip() for x in stopwords]

allwords = a.split()
resultwords  = [word for word in allwords if word.lower() not
in stopwords]
filteredtext = ' '.join(resultwords)

words = re.findall(r'\w+', filteredtext)
lower_words = [word.lower() for word in words]
word_counts = Counter(lower_words).most_common(50)
top50 = word_counts[:50]


print(top50)
```

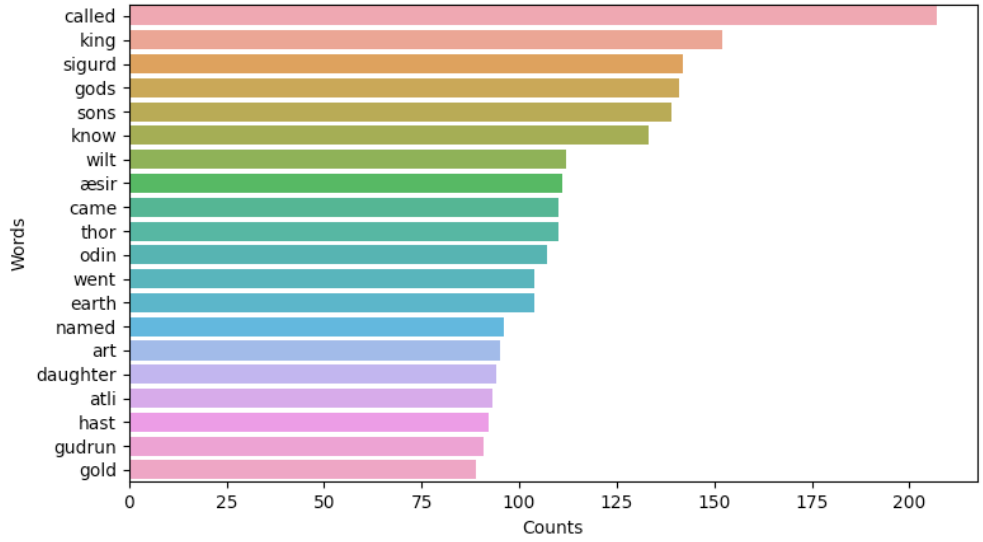
Returning to us the following list.

50 most common norse words	
called : 235	sword : 77
sons : 150	gunnar : 76
sigurd : 145	life : 75
gods : 138	words : 74
king : 137	helgi : 73
know : 132	race : 68
wilt : 123	home : 66
came : 121	hand : 65
thor : 116	took : 65
went : 112	'tis : 64
named : 107	heart : 64
æsir : 107	woman : 64
daughter : 107	old : 62
art : 102	prince : 62
hast : 101	father : 61
earth : 100	brynhild : 61
odin : 97	world : 59
gold : 94	wolf : 59
good : 93	night : 58
gudrun : 92	forth : 58
himself : 90	heaven : 58
hall : 89	wise : 58
loki : 85	replied : 58
atli : 82	didst : 57
long : 80	wife : 57

I also represented the 20 most common words on a bar chart, using Python.

```
print("2.1: Barchart of the most common words in Sturluson:")

common_words_nordic =
frequent_nordic_word_counts.most_common(20)
common_words_nordic = pd.DataFrame(common_words_nordic,
columns= ['Words', 'Counts'])
plt.figure(figsize=(2,2))
sns.barplot(y="Words", x="Counts", data=common_words_nordic)
plt.show()
```



8.4 Comparing the most common Homeric words to most common Norse words

The 10 most common words in Homers two texts are:
Ulysses (626), jove/zeus (465), arms (432), gods(431), house (370), heaven (353), hector (335), god (327), went (319), troy (315)

The 10 most common words in the Norse Sagas are:
('gods', 166), ('king', 166), ('sigurd', 162), ('sons', 156), ('know', 145), ('thor', 137), ('æsir', 133), ('odin', 126), ('came', 123)

Below, I made a table, showing the 50 most common words of both the *Edda's* and the *Odyssey/Iliad.*

Norse Sagas 50 most common		Iliad/Odyssey 50 most common words	
called : 235	sword : 77	ulysses : 626	home : 220
sons : 150	gunnar : 76	jove (Zeus): 465	suitors : 218
sigurd : 145	life : 75	arms : 432	spoke : 217
gods : 138	words : 74	gods : 431	good : 217
king : 137	helgi : 73	house : 370	head : 216
know : 132	race : 68	heaven : 353	old : 216
wilt : 123	home : 66	hector : 335	fate : 214
came : 121	hand : 65	god : 327	far : 210
thor : 116	took : 65	went : 319	death : 208
went : 112	'tis : 64	troy : 315	force : 206
named : 107	heart : 64	hand : 304	left : 204
æsir : 107	woman : 64	war : 286	dead : 202
daughter : 107	old : 62	long : 285	away : 201
art : 102	prince : 62	came : 281	plain : 201
hast : 101	father : 61	achilles : 279	greece : 201
earth : 100	brynhild : 61	chief : 266	greeks : 195
odin : 97	world : 59	father : 264	people : 192
gold : 94	wolf : 59	eyes : 263	brave : 190
good : 93	night : 58	king : 255	vain : 188
gudrun : 92	forth : 58	hands : 236	heart : 187
himself : 90	heaven : 58	telemachus : 233	know : 186
hall : 89	wise : 58	fight : 233	fair : 186
loki : 85	replied : 58	ship : 223	rage : 184
atli : 82	didst : 57	trojan : 222	sea : 182
long : 80	wife : 57	took : 221	minerva : 182

I chose to highlight similar words in different colours in order to create a better overview. Putting the table side by side, we can see that many similar nouns appear in both the Greek and Nordic universes, such as ,,hand'', ,,heaven'', ''gods'', ''king'', ''father''. These words already indicate, that both the Greek myths and Norse sagas centre a lot around the idea of heaven and gods, but also the importance of earthly matters, such as family. There are also a number of main verbs occurring, such as ''came'', ''took'', ''went'', ''know''. The same can be said for adjectives, such as ''long'' and

‘’good’’. The words like ‘’long’’, or ‘’went’’ and ‘’came’’ may indicate travelling, waiting and the passage of time, which are both reoccurring themes in both the Greek mythologies and the Norse sagas. The common usage of words like ‘’king’’ gives us the reminder that such a person is of vast importance to the stories. Furthermore, the gods, which play a fundamental role in both the Greek mythologies and Norse sagas, occur very often in both universes, as do the mentions of heroes.

9 Presentation of Results: Similarities between Homers poems and the Norse sagas

I will in the forthcoming sections outline some of the results I have found, based on my analysis.

9.1 Descriptions of vegetation and climate in Homers Odyssey and Iliad

By using the followed line of code, I can get a count, on how many times certain words were mentioned. For example, if I wanted to find out, how many times the word snow was mentioned in Homers works, I could use the following line of code:

```
file = open("Odyssey-Iliad.txt", "r")

#read content of file to string
data = file.read()

#get number of occurrences of the substring in the string
occurrences = data.count("snow")
print('Number of occurrences of the word snow in Homer :',
occurrences)
```

Consequently, the screen would show me the following result:
Number of occurrences of the word snow in Homer : 41

I used the same code for various indicators of climate and have compiled a small overview of the results on the screen:

Number of occurrences of the word sun in Homer : 171
Number of occurrences of the word moon in Homer : 19
Number of occurrences of the word poplar in Homer : 9

Number of occurrences of the word alder in Homer : 6
Number of occurrences of the word meadow in Homer : 9
Number of occurrences of the word rain in Homer : 270
Number of occurrences of the word fog in Homer : 1
Number of occurrences of the word foggy in Homer : 1
Number of occurrences of the word wind in Homer : 204
Number of occurrences of the word mist in Homer : 44
Number of occurrences of the word misty in Homer : 2
Number of occurrences of the word cold in Homer : 54
Number of occurrences of the word warm in Homer : 81

As we can see, words like rain, wind, mist and cold are mentioned relatively frequently in both the Odyssey and the Iliad, indicating a climate that could hint at a more northern and colder climate.

While getting a count on certain words, in order to indicate how important they are to the text, it would however also be nice to find out, in what context they are used. For this, I used another code, which would enable me to single out sentences in which certain words would appear. I'll use the example of ''poplar'':

```
odysseyiliad_text = open('Odyssey-Iliad.txt',
encoding='utf8').read()

lstsentencesOdysseyIliad = re.split('[.!\?]',
odysseyiliad_text)


for sentence in lstsentencesOdysseyIliad:
    if sentence.__contains__('poplar'):
        print(sentence)
```

As we can see the Odyssey and Iliad are filled with descriptions of trees typically found in the northern hemisphere, like for example polar and alder. In order to scan the text for clues about the vegetation and climate, I used the following line of code, and in this case searched for sentences, in which the word ''poplar'' appeared.

```
for sentence in lstsentencesOdysseyIliad:
    if sentence.__contains__('poplar'):
        print(sentence)
```

Round her cave there was a thick wood of alder, poplar, and sweet smelling cypress trees, wherein all kinds of great birds had built their nests—owls, hawks, and chattering sea-crows that occupy their business in the waters
(Odyssey, Book V)

She also gave him a sharp axe, and then led the way to the far end of the island where the largest trees grew—alder, poplar and pine, that reached the sky—very dry and well seasoned, so as to sail light for him in the water
(Odyssey, Book V)

These two passages are taken from Ulysses arrival to the Island of Ogygia, which much rather paints a picture of a Scandinavian vegetation that that of a Mediterranean one. However, we also find a similar climate in the island of the Cyclopes:

At the head of the harbour there is a spring of clear water coming out of a cave, and there are poplars growing all round it.
(Odyssey, Book IX)

Throughout the Odyssey Iliad, we also have a lot of descriptions of a grey sea. Using the same line of code as above, we can find passages such as these:

I then went on board and told my men to
loose the ship from her moorings; so they at once got into her, took
their places, and began to smite the grey sea with their oars.
(Odyssey, Book XII)

We also have a lot of mentions of mist, wind and rain:

So when inclement winters vex the plain
With piercing frosts, or thick-descending rain
(Iliad, Book III)

Even more interestingly, we have multiple passages throughout the poems that describe a snowy weather:

It came on to freeze with a North wind
blowing; the snow fell small and fine like hoar frost, and our shields

were coated thick with rime

(Odyssey, Book XIV)

As when the piercing blasts of Boreas blow,
And scatter o'er the fields the driving snow;
From dusky clouds the fleecy winter flies,
Whose dazzling lustre whitens all the skies

(Iliad book XII)

These two passages indicate a very cold climate of freezing temperatures and falling snow, reminiscent of the colder climate of Scandinavia.

Similarly, the characters are often dressed in thick clothing, such as cloaks, as well as wool and fur, instead of the otherwise better known lighter tunics we know from ancient Greece. By using the same code as earlier, we can once again scan our texts, for the number of times a certain word is mentioned:

```
occurrences = data.count("cloak")
print('Number of occurrences of the word cloak in Homer :',
occurrences)
```

Number of occurrences of the word cloak in Homer : 57
Number of occurrences of the word cloaks in Homer : 15
Number of occurrences of the word wool in Homer : 17
Number of occurrences of the word fur in Homer : 290

As well as printing the sentences in which the words occur:

```
for sentence in lstsentencessturluson:
    if sentence.__contains__(cloak):
        print(sentence)
```

When the servants had washed them and anointed them with oil, they brought them woollen cloaks and shirts, and the two took their seats by the side of Menelaus.

(Odyssey, book IX)

With this he got up and made a bed for Ulysses by throwing some goatskins and sheepskins on the ground in front of the fire. Here Ulysses lay down, and Eumaeus covered him over with a great heavy Cloak that he kept for a change in case of extraordinarily bad weather.

[...]
First he slung his sword over his brawny shoulders and put on a thick cloak to keep out the wind.

(Odyssey, book XIV)

9.2 Food, drink and tableware

Throughout Homers poems, whenever a meal or a drink is consumed, there are no mentions of clay pottery, which already back then was widely used in the Mediterranean. Instead, the rich use primarily use gold cups and silver plates, while the poor use wooden jugs to drink out from.

```
print("cup")

term = "cup"
file = open('Odyssey-Iliad.txt', 'r')
for line in file:
    if line.__contains__('cup'):
        print(line)
```

Here presenting one example:

When the outer meats were done they drew them off the spits and sat down to dinner where they were waited upon by some worthy henchmen, who kept pouring them out their wine in cups of gold

(Odyssey, Book II)

Also, people in Homers tales often start the day by having a large meal consisting of meat for breakfast. In general, most meals evolve around meat, which was the primary diet of the northerners, where fruits were scarcer.

Number of occurrences of the word meat in Homer : 55
Number of occurrences of the word fruit in Homer : 39
Number of occurrences of the word olive in Homer : 20

Also in Greek mythology, the heavenly drink Ambrosia can be translated to immortality and is essentialy fermented honey – also known as mead. Golden, sunlike color, the nondecaying drink has been associated with

nondyin. (Witzel 2012, p. 159). In the nordic Sagas, Odin first steals the mead in order to create poetry.

9.3 Polytheism

Another similarity I want to get into, is the trait, that both the Greeks and Norsemen had a polytheistic religion. Below I have made a table with the most prominent gods in both the Norse sagas and Greek mythologies.

Norse Gods		**Greek Gods**	
Odin	God of wisdom, enlightenment, poetry, death	**Zeus**	The all-father, god of weather, law, fate
Thor	God of lightning & thunder, war	**Ares**	God of war
Freya	Goddess of love, lust, fertility, magic	**Aphrodite**	Goddess of beauty and love
Loki	God of trickery, deceit (half-god, half-giant)	**Dionysis**	God of wine, pleasure, festivity
Freyr	God of fertility, peace, health	**Hephaestus**	God of fire, metalworking, sculpture
Heimdal	Gatekeeper to the nine realms	**Apollo**	God of prophecy, music, poetry, knowledge
Frigg	Goddess of marriage, prophesy	**Hera**	Goddess of women and marriage
Balder	God of light, beauty, renewal	**Hermes**	God of travel, hospitality, trade
Tyr	God of justice (war), truth, morality	**Athena**	Goddess of wisdom and defence
Idun	Goddess of fertility, beauty, youthfulness	**Artemis**	Goddess of hunting, animals, childbirth
Gefion	Goddess of ploughing	**Demeter**	Goddess of agriculture and grain
Ægir	God of the sea	**Poseidon**	God of the sea
Hel	Goddess of the underworld	**Hades**	God of the underworld

I want to stress, that polytheism is obviously in no way unique to these two religions, and that similar gods can be found in ancient Egyptian and far

eastern religions. However, I think it is an important factor to state these most prominent gods and their common traits, in order to get a clearer overview of the of both the Homeric and the Norse Universes.

9.4 Similar themes and stories

When diving into our two texts, we can notice that there are a number of similar characters, themes and stories in both the Greek mythologies and Norse sagas.

9.4.1 The number 9

The first passage I want to focus on, is the saga, where Odin hangs himself in the tree Yggdrasil for a total of nine days. By hanging on the tree of wisdom, which roots connect the 9 worlds, Odin enters an otherworldly realm an obtains wisdom and the art of runic scripture.

Similarly, in the Odyssey, there are a few passages which revolves around the number nine. For example, before Odysseus reaches the island of Ogygia, Zeus strikes lighting towards his ship, which collapses, causing the whole crew to drown. Except for Odysseus who clings to a broken mast for nine days before reaching Calypsos Island, where he ended up staying for seven days.

In the collection of Norse mythologies, after Balder dies from being shot by an arrow of mistletoe, his brother Hermod rides on Odins horse Sleipnir for 9 days to bring Balder back from Hel.

Also, the Trojan war lasted nine long years, after Odysseus embarked on his way home with his nine ships.

9.4.2 Weaknesses leading to death

After Balder's mother Frigg makes all living and dead things in the world swear not to do any harm to Balder, she however did not make the mistletoe swear, as she thought a such small plant to be unharmful. However, Loki soon finds out, and makes an arrow of mistletoe and during a fun game of shooting arrows against Balder, who cannot be harmed, Loki handles the

arrow of mistletoe, Balder's only weakness, to Balder's blind brother Hoder, who accidentally ends up killing Balder.

Similarly, Homer describes how Achilles as a child was bathed in the river Styx to become invulnerable. However, as he was held by the heels, these were not protected, and consequently Achilles dies from an arrow in his heel.

9.4.3 Prometheus and Loki's punishment

After having stolen some of the fire from the gods and giving it to the humans, the gods get so infuriated at Prometheus, that they decide to punish him. They condemn him to be tied with chains on top of a mountain, where every day, an eagle will come and pick him and eat his liver, for all eternity.

Similarly, after the gods have had enough of Loki, they condemn him to be tied up in a cave underneath a poisonous snake, whose venom continually drops down on Loki for all eternity.

9.4.4 Descending to the underworld

In Book VI of the Odyssey, Odysseus descends down into the House of Hades, where he must consult the blind Theban seer Teiresias about his journey home.

Similarly, before Balder dies, a nervous Odin enters the underworld Hel in disguise, in order to enquire to the female shaman *Vølven* about the death of Balder, which Balder himself had seen in a dream. Though not entirely successful in getting the answers he wanted, he emerges out of Hel again.

There are further similarities between the Nordic and Greek tradition, such as supernatural births and golden apples. However, I chose to single out the most similar and important passages for the sake of limitation.

10 Discussion

The focus is on two ancient historical texts, which have most likely been altered through time and whose exact origins are unknown to us. Even though the purpose of this thesis is to get to a deeper insight to the Homeric texts and Norse sagas, it is difficult, if not even impossible to get to a universal truth and to come with bullet proof evidence for the research findings. Especially when it comes to literature studies, interpretation is an integral part of the research process. Therefore, multiple approaches and results may prove to be reasonable, even though they may differ (NESH).

In terms of my initial research question: ‘’Is there a link in terms of storyline between the Greek mythologies and Norse Sagas?’’ I would say that there are definitely similarities. However, when coming to the second part of my research question, ‘’Did the Greek mythologies indeed derive from a northern tradition?’’, I would definitely say, that this thesis has not managed to proof this. In all, what started as an intriguing quest for the search of the Nordic roots of Homers *Odyssey* and *Iliad* and later pairing it with Vinci’s findings has to me just gone to show, that the arguments from Vinci were far fetched and that the Greek mythologies do indeed predate the Norse sagas.

My choice of methods was inspired from what I learned through my one year master in Digital Humanities at Linnæus University. Whilst already having a background in history, culture and literature studies, opting for digital tools, such as the text processing and text analysis programs offered by Python and Orange3 were a new path to me. It was however also an option that I decided to go with straight away, seeing the vast amount of text I had to analyse.

Finally, since Homer and Snorri are ancient historical persons, no special regard has been given in terms of research ethics, like for example human dignity or consent. Even though I have in a large part based my research on Felice Vinci’s studies, I have not been in contact with him. Even though, my research does not support the findings or agree with the speculations of Vinci, I found his research interesting. It is however also important to state, that even though Vinci is a scientist, he is no historian, linguist or literature scholar. Furthermore, Vinci’s studies have, at least to my knowledge, not received approval of relevant academic circles, such as Universities, or cultural, historical or literature institutes.

11 Conclusion

After having used text processing and analysis programs to deep dive into both Homers Odyssey & Iliad as well as the Nordic Mythologies, I can say, that there certainly are similarities and links between the two narratives. However, it seems far reached, as stated by Vinci, that the Greek mythology should indeed have been inspired by the northerners. I think, that while it's a very interesting historical analytical experiment, there simply isn't enough ''hard'' evidence to support Vinci's claim, northern tales having indeed influence the Greek tales. The so-called ''hints'', like the colder climate, the vegetation, use of warm woollen clothing and hearty food would of course, from today's point of view, lead us to think more of the Vikings than of the Greeks. But is that really enough to say, that the Greek mythologies should indeed have been inspired from the Norse mythologies? Especially considering, that there has been a historically proven ice age at the time of the creation of the Greek poems. Similarly, the lack of some traditional Greek items, such as clay pottery and the use of for example wooden cups, seem more coincidental than smoking guns pointing to a northern heritage. And what about the historical evidence, which is able to date the Greek poems way further back than the stories of Thor and Odin? I simply don't think that there is a so called smoking gun to support Vinci's claims.

However, I wouldn't disregard Vinci's research completely. As a humanist, I think it's important to challenge the status quo and be open to reinvestigate history. There certainly are a lot of similarities between the epic poems of Homer and of the Nordic sagas, but I think, that this is because, that in the end, we are not that different from each other, culturally speaking. Both the Nordic and Mediterranean countries spring from a proto Indo-European tradition. This has especially been proven when it comes to the evolution of our different European languages, which all stem from a Indo-European mother tongue, which has since evolved and changed over time, but still give us a lot of clues of its heritage. Therefore, I think that the Homeric poems as well as the Norse sagas are simply a fine example of a complex and universal collection of stories, which can be set in many different locations and cultures, since the European tradition is an offspring of Indo-European culture, which, even more so at the time, was very visible. But when push comes to shove, all indicators point to the Greek mythologies predating and inspiring the Norse sagas.

11.1 Some final thoughts

If Vinci's theory is truly correct, and we want to follow his path to the supposedly Nordic origins to the Greek mythologies, we must try different and undiscovered routes. One could also say, that we need to put on a new pair of glasses and see things from a different perspective. This can be particularly difficult, when it comes to age old beliefs, with strong connotations, such as the Odyssey and Iliad, which today are an essential part and heritage of Greek culture. I am therefore well aware, that this Master Thesis might come across as somewhat unconventional but in order to further develop our knowledge and understanding of our culture and history, I believe we must challenge status quo and not be content with the explication which seems the easiest. As I have explored throughout this Master in Digital Humanities, one of the most important points that have been stressed again and again, is that the humanities are not an exact science, and that theories and perceptions can change overtime and are open to constant reinterpretation. This thesis determines to do exactly that. Thank you for reading.

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Weblinks

What is text analysis? https://monkeylearn.com/text-analysis/

Climate periods:
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The Norwegian National Research Ethics Committees: https://www.forskningsetikk.no/en/guidelines/social-sciences-humanities-law-and-theology/guidelines-for-research-ethics-in-the-social-sciences-humanities-law-and-theology/

Appendix 1: Python code for text processing and text analysis. Searching for most common words and their occurence, context of the use of words (displaying words in lines and sentences)

```
import re
import collections
from typing import TextIO

from collections import Counter

def cleanWords(lst):
    for i in range(len(lst)):
        # remove any dots or commas if they appear
        if ('.' in lst[i]):
            lst[i] = lst[i].replace('.', '')
        elif (',' in lst[i]):
            lst[i] = lst[i].replace(',', '')
    return lst

def longest_sentence(filename):
    with open(filename, 'r') as infile:
        # sentence = infile.read().split('.')
        txtFile = infile.read()
    sentence = re.split('[.!\?]', txtFile)

    max_len = len(max(sentence, key=len))
    return [sentence for sentence in sentence if len(sentence)
== max_len]

def longest_word(filename):
    infile: TextIO
    with open(filename, 'r') as infile:
        words = infile.read().split()
    max_len = len(max(words, key=len))
    return [word for word in words if len(word) == max_len]

def count_capital_words(filename):
    count = 0
    with open(filename) as fp:
        for line in fp:
            for word in line.split():
                if word.istitle():
                    count += 1
    return count

def extract_named_entities(inputString):
    # create empty list
    lstAtoL = []
    lstMtoZ = []
    for word in inputString.split():
        if not (word.istitle()):
            if re.match('[a-l]', word):
                lstAtoL.append(word)
            elif re.match('[m-z]', word):
                lstMtoZ.append(word)
```

```
    print("Printing list a to l \n")
    print(cleanWords(lstAtoL))
    print("-------------------- \n")
    print("Printing list m to z \n")
    print(cleanWords(lstMtoZ))

    # for each word in the inputTxt
# if first letter is not capital letter
# if first letter a-l add in lst1, otherwise add to lst2

def countWords(sentence):
    return len(sentence.split())


print("Hello Odyssey")

print("")
print("*********************************")
print("Odyssey and Iliad words")
print("*********************************")
print("")


odysseyiliad_text = open('Odyssey-Iliad.txt',
encoding='utf8').read()

lstsentencesOdysseyIliad = re.split('[.!\?]',
odysseyiliad_text)

print("plate")

for sentence in lstsentencesOdysseyIliad:
    if sentence.__contains__('plate'):
        print(sentence)

print("snow")

for sentence in lstsentencesOdysseyIliad:
    if sentence.__contains__('snow'):
        print(sentence)

print("cup")

for sentence in lstsentencesOdysseyIliad:
    if sentence.__contains__('cup'):
        print(sentence)



print("Trees")

for sentence in lstsentencesOdysseyIliad:
    if sentence.__contains__('poplar'):
        print(sentence)
```

```
print("")
print("**********************************")
print("Young and Elder Edda Words")
print("**********************************")
print("")


sturluson_text = open('SturlusonComplete.txt',
encoding='utf8').read()

lstsentencessturluson = re.split('[.!\?]', sturluson_text)

for sentence in lstsentencessturluson:
    if sentence.__contains__('snow'):
        print(sentence)

print("**********************************")
print("")
print("**********************************")
print("")

print("Counting words")
print("--------------")
print("Homer")
print(".............")
print("")

file = open("Odyssey-Iliad.txt", "r")

#read content of file to string
data = file.read()

#get number of occurrences of the substring in the string
occurrences = data.count("snow")
print('Number of occurrences of the word snow in Homer :',
occurrences)

occurrences = data.count("snowing")
print('Number of occurrences of the word snowing in Homer :',
occurrences)

occurrences = data.count("snowflake")
print('Number of occurrences of the word snowflake in Homer
:', occurrences)

occurrences = data.count("snowflakes")
print('Number of occurrences of the word snowflakes in Homer
:', occurrences)

occurrences = data.count("snowstorm")
print('Number of occurrences of the word snowstorm in Homer
:', occurrences)

occurrences = data.count("snowfall")
print('Number of occurrences of the word snowfall in Homer :',
```

```
occurrences)

occurrences = data.count("snow-storm")
print('Number of occurrences of the word snow-storm in Homer
:', occurrences)

occurrences = data.count("snow-flake")
print('Number of occurrences of the word snow-flake in Homer
:', occurrences)

occurrences = data.count("snow-flakes")
print('Number of occurrences of the word snow-flakes in Homer
:', occurrences)



occurrences = data.count("sun")
print('Number of occurrences of the word sun in Homer :',
occurrences)

occurrences = data.count("moon")
print('Number of occurrences of the word moon in Homer :',
occurrences)

occurrences = data.count("poplar")
print('Number of occurrences of the word poplar in Homer :',
occurrences)

occurrences = data.count("alder")
print('Number of occurrences of the word alder in Homer :',
occurrences)

occurrences = data.count("meadow")
print('Number of occurrences of the word meadow in Homer :',
occurrences)

occurrences = data.count("rain")
print('Number of occurrences of the word rain in Homer :',
occurrences)

occurrences = data.count("fog")
print('Number of occurrences of the word fog in Homer :',
occurrences)

occurrences = data.count("foggy")
print('Number of occurrences of the word foggy in Homer :',
occurrences)

occurrences = data.count("wind")
print('Number of occurrences of the word wind in Homer :',
occurrences)

occurrences = data.count("windy")
print('Number of occurrences of the word windy in Homer :',
occurrences)
```

```
occurrences = data.count("winds")
print('Number of occurrences of the word winds in Homer :',
occurrences)

occurrences = data.count("windy storms")
print('Number of occurrences of the word windy storms in Homer
:', occurrences)

occurrences = data.count("strong winds")
print('Number of occurrences of the word strong winds in Homer
:', occurrences)

occurrences = data.count("terrible winds")
print('Number of occurrences of the word terrible winds in
Homer :', occurrences)

occurrences = data.count("storm")
print('Number of occurrences of the word storm in Homer :',
occurrences)

occurrences = data.count("dark sea")
print('Number of occurrences of the word dark sea in Homer :',
occurrences)

occurrences = data.count("wine dark sea")
print('Number of occurrences of the word wine dark sea in
Homer :', occurrences)

occurrences = data.count("misty sea")
print('Number of occurrences of the word misty sea in Homer
:', occurrences)



occurrences = data.count("cloud")
print('Number of occurrences of the word cloud in Homer :',
occurrences)

occurrences = data.count("cloudy")
print('Number of occurrences of the word cloudy in Homer :',
occurrences)

occurrences = data.count("dark cloud")
print('Number of occurrences of the word dark cloud in Homer
:', occurrences)

occurrences = data.count("dark clouds")
print('Number of occurrences of the word dark clouds in Homer
:', occurrences)

occurrences = data.count("gray")
print('Number of occurrences of the word gray in Homer :',
occurrences)

occurrences = data.count("mist")
print('Number of occurrences of the word mist in Homer :',
```

```
occurrences)

occurrences = data.count("misty")
print('Number of occurrences of the word misty in Homer :',
occurrences)

occurrences = data.count("cold")
print('Number of occurrences of the word cold in Homer :',
occurrences)

occurrences = data.count("warm")
print('Number of occurrences of the word warm in Homer :',
occurrences)

occurrences = data.count("cloak")
print('Number of occurrences of the word cloak in Homer :',
occurrences)

occurrences = data.count("cloaks")
print('Number of occurrences of the word cloaks in Homer :',
occurrences)

occurrences = data.count("thick cloak")
print('Number of occurrences of the word thick cloak in Homer
:', occurrences)

occurrences = data.count("thick cloaks")
print('Number of occurrences of the word thick cloaks in Homer
:', occurrences)

occurrences = data.count("heavy cloak")
print('Number of occurrences of the word heavy cloak in Homer
:', occurrences)

occurrences = data.count("woolen cloak")
print('Number of occurrences of the word woolen cloak in Homer
:', occurrences)

occurrences = data.count("tunic")
print('Number of occurrences of the word tunic in Homer :',
occurrences)

occurrences = data.count("hellespont")
print('Number of occurrences of the word heavy hellespont in
Homer :', occurrences)

occurrences = data.count("wool")
print('Number of occurrences of the word wool in Homer :',
occurrences)

occurrences = data.count("fur")
print('Number of occurrences of the word fur in Homer :',
occurrences)

occurrences = data.count("bronze")
print('Number of occurrences of the word bronze in Homer :',
```

```
occurrences)

occurrences = data.count("wooden jug")
print('Number of occurrences of the word wooden jug in Homer
:', occurrences)

occurrences = data.count("wooden cup")
print('Number of occurrences of the word wooden cup in Homer
:', occurrences)

occurrences = data.count("ox")
print('Number of occurrences of the word ox in Homer :',
occurrences)

occurrences = data.count("clay")
print('Number of occurrences of the word clay in Homer :',
occurrences)


occurrences = data.count("pottery")
print('Number of occurrences of the word pottery in Homer :',
occurrences)

occurrences = data.count("pot")
print('Number of occurrences of the word pot in Homer :',
occurrences)

occurrences = data.count("clay")
print('Number of occurrences of the word clay in Homer :',
occurrences)

occurrences = data.count("plate")
print('Number of occurrences of the word plate in Homer :',
occurrences)

occurrences = data.count("cup")
print('Number of occurrences of the word cup in Homer :',
occurrences)


occurrences = data.count("oxen")
print('Number of occurrences of the word oxen in Homer :',
occurrences)

occurrences = data.count("sun")
print('Number of occurrences of the word sun in Homer :',
occurrences)

occurrences = data.count("sweat")
print('Number of occurrences of the word sweat in Homer :',
occurrences)

occurrences = data.count("amber")
print('Number of occurrences of the word amber in Homer :',
occurrences)
```

```
occurrences = data.count("wood")
print('Number of occurrences of the word wood in Homer :',
occurrences)



occurrences = data.count("silver")
print('Number of occurrences of the word silver in Homer :',
occurrences)

occurrences = data.count("gold")
print('Number of occurrences of the word gold in Homer :',
occurrences)

occurrences = data.count("breakfast")
print('Number of occurrences of the word breakfast in Homer
:', occurrences)

occurrences = data.count("meat")
print('Number of occurrences of the word meat in Homer :',
occurrences)

occurrences = data.count("fruit")
print('Number of occurrences of the word fruit in Homer :',
occurrences)

occurrences = data.count("olive")
print('Number of occurrences of the word olive in Homer :',
occurrences)

occurrences = data.count("olives")
print('Number of occurrences of the word olives in Homer :',
occurrences)




print("")
print("******************")
print("")

print("Counting words in Sturluson")
print(".........................")
print("")

file2 = open("SturlusonComplete.txt", "r")

#read content of file to string
data2 = file2.read()

#get number of occurrences of the substring in the string
occurrences2 = data2.count("snow")

print('Number of occurrences of the word snow in Sturluson :',
occurrences2)
```

```
occurrences2 = data2.count("clay")
print('Number of occurrences of the word clay in Sturluson :',
occurrences2)

occurrences2 = data2.count("sun")
print('Number of occurrences of the word sun in Sturluson :',
occurrences2)

occurrences2 = data2.count("moon")
print('Number of occurrences of the word moon in Sturluson :',
occurrences2)

occurrences2 = data2.count("hellespont")
print('Number of occurrences of the word hellespont in
Sturluson :', occurrences2)

occurrences2 = data2.count("toija")
print('Number of occurrences of the word heavy hellespont in
toija :', occurrences2)



print("**********************************")
print("")

print("cup")

term = "cup"
file = open('Odyssey-Iliad.txt', 'r')
for line in file:
    if line.__contains__('cup'):
        print(line)

print("plate")
term = "plate"
file = open('Odyssey-Iliad.txt', 'r')
for line in file:
    if line.__contains__('plate'):
        print(line)

print("wind")

term = "wind"
file = open('Odyssey-Iliad.txt', 'r')
for line in file:
    if line.__contains__('wind'):
        print(line)

print("snow")

term = "snow"
file = open('Odyssey-Iliad.txt', 'r')
for line in file:
    if line.__contains__('snow'):
        print(line)
```

```
print("Most common words Homer")

f=open("Odyssey-Iliad.txt")
a=f.read()
with open("stopwords.txt") as f:
    stopwords = f.readlines()
stopwords = [x.strip() for x in stopwords]

allwords = a.split()
resultwords  = [word for word in allwords if word.lower() not
in stopwords]
filteredtext = ' '.join(resultwords)

words = re.findall(r'\w+', filteredtext)
lower_words = [word.lower() for word in words]
word_counts = Counter(lower_words).most_common(20)
top10 = word_counts[:20]

print(top10)

print("\n")

file = open('Odyssey-Iliad.txt', encoding="utf8")
a = file.read()
# Stopwords
stopwords = set(line.strip() for line in
open('stopwords.txt'))


wordcount = {}
# To eliminate duplicates, we split by punctuation, and use
case delimiters.
for word in a.lower().split():
    word = word.replace(".", "")
    word = word.replace(",", "")
    word = word.replace(":", "")
    word = word.replace("\"", "")
    word = word.replace("!", "")
    word = word.replace("â€œ", "")
    word = word.replace("â€˜", "")
    word = word.replace("*", "")
    word = word.replace("'", "")
    word = word.replace("´", "")
    if word not in stopwords:
        if word not in wordcount:
            wordcount[word] = 1
        else:
            wordcount[word] += 1
# Printing the most common word
n_print = int(input("How many most common words to print: "))
print("\nOK. The {} most common words are as
follows\n".format(n_print))
word_counter = collections.Counter(wordcount)
for word, count in word_counter.most_common(n_print):
    print(word, ": ", count)
# Closing the file
```

```
file.close()
# Creating a data frame of the most common words
# Drawing a bar chart
lst = word_counter.most_common(n_print)



print("\n")
print("")
print("")
print("Most common words Sturluson")

f=open("SturlusonComplete.txt")
a=f.read()
with open("stopwords.txt") as f:
    stopwords = f.readlines()
stopwords = [x.strip() for x in stopwords]

allwords = a.split()
resultwords  = [word for word in allwords if word.lower() not
in stopwords]
filteredtext = ' '.join(resultwords)

words = re.findall(r'\w+', filteredtext)
lower_words = [word.lower() for word in words]
word_counts = Counter(lower_words).most_common(20)
top10 = word_counts[:20]


print(top10)

print("\n")

file = open('SturlusonComplete.txt', encoding="utf8")
a = file.read()
# Stopwords
stopwords = set(line.strip() for line in
open('stopwords.txt'))


wordcount = {}
# To eliminate duplicates, we split by punctuation, and use
case delimiters.
for word in a.lower().split():
    word = word.replace(".", "")
    word = word.replace(",", "")
    word = word.replace(":", "")
    word = word.replace("\"", "")
    word = word.replace("!", "")
    word = word.replace("â€œ", "")
    word = word.replace("â€˜", "")
    word = word.replace("*", "")
    if word not in stopwords:
        if word not in wordcount:
            wordcount[word] = 1
        else:
```

```
            wordcount[word] += 1
# Printing the most common word
n_print = int(input("How many most common words to print: "))
print("\nOK. The {} most common words are as
follows\n".format(n_print))
word_counter = collections.Counter(wordcount)
for word, count in word_counter.most_common(n_print):
    print(word, ": ", count)
# Closing the file
file.close()
# Creating a data frame of the most common words
# Drawing a bar chart
lst = word_counter.most_common(n_print)

print("\n")
```

Appendix 2: Barcharts and scatterplots in Python

```
import pandas as pd
import seaborn as sns
from matplotlib import pyplot as plt

print("Task 1: Find the 10 most common words in each chapter
and save them as a csv file")

import re
from collections import Counter


def countWords(sentence):
    return len(sentence.split())


def cleanText(text):
    if ('\n' in text):
        text = text.replace('\n', '')
    # deleting comma as it doesnt affect the sentence length,
but it is destroying the csv format if not removed
    if (',' in text):
        text = text.replace(',', '')
    # replacing '\' character with blank space, for cleaning
purposes
    if ('\\' in text):
        text = text.replace('\\', ' ')
    return text


odyssey_text = open('Odyssey.txt', encoding='utf8').read()
odyssey_text = cleanText(odyssey_text)

lstOdysseySentences = odyssey_text.split(".")
lstOdysseySentences.sort(key=countWords, reverse=True)
```

```
iliad_text = open('Iliad.txt', encoding='utf8').read()
iliad_text = cleanText(iliad_text)

lstIliadSentences = iliad_text.split(".")
lstIliadSentences.sort(key=countWords, reverse=True)

# generating content for the sentence_csv file
header = "length,sentence,chapter,ranking\n"
data = ""

for i in range(10):
    data = data + str(countWords(lstOdysseySentences[i])) +
"," + lstOdysseySentences[i] + ",1," + str(i + 1) + "\n"
    data = data + str(countWords(lstIliadSentences[i])) + ","
+ lstIliadSentences[i] + ",2," + str(i + 1) + "\n"

# creating CSV file


stop_word_lines = open('stopwordlist.txt', encoding="utf-
8").readlines()
stop_words = set(map(str.strip, stop_word_lines))

# finding the most frequent words from the Sapir chapter
odyssey_words = re.findall(r'[\w-]+', odyssey_text.lower())
frequent_odyssey_words = [w for w in odyssey_words if w not in
stop_words]
frequent_odyssey_word_counts = Counter(frequent_odyssey_words)

# finding the most frequent words from the Muller chapter
iliad_words = re.findall(r'[\w-]+', iliad_text.lower())
frequent_iliad_words = [w for w in iliad_words if w not in
stop_words]
frequent_iliad_word_counts = Counter(frequent_iliad_words)



# generating content for the sentence_csv file
header = "keyword,frequency,length,chapter\n"
data = ""

for i in frequent_odyssey_word_counts.most_common(10):
    data = data + i[0] + "," + str(i[1]) + "," +
str(len(i[0])) + ",1\n"

for i in frequent_iliad_word_counts.most_common(10):
    data = data + i[0] + "," + str(i[1]) + "," +
str(len(i[0])) + ",2\n"

fw = open("words.csv", "w+", encoding="utf-8")
fw.write(header + data)

print("words.csv file created")

# print(data)
```

```
fw.close()
#closing the file

print("Task 2: Visualization")
print("2.1: Barchart of the most common words in Odyssey:")

common_words_odyssey =
frequent_odyssey_word_counts.most_common(10)
common_words_odyssey = pd.DataFrame(common_words_odyssey,
columns= ['Words', 'Counts'])
plt.figure(figsize=(2,2))
sns.barplot(y="Words", x="Counts", data=common_words_odyssey)
plt.show()

print("2.1: Barchart of the most common words in Iliad:")

common_words_iliad =
frequent_iliad_word_counts.most_common(10)
common_words_iliad = pd.DataFrame(common_words_iliad, columns=
['Words', 'Counts'])
plt.figure(figsize=(2,2))
sns.barplot(y="Words", x="Counts", data=common_words_iliad)
plt.show()

print("2.2: Scatterplot of the most common words in Odyssey:
")

common_words_odyssey =
frequent_odyssey_word_counts.most_common(10)
common_words_odyssey = pd.DataFrame(common_words_odyssey,
columns= ['Words', 'Counts'])
plt.figure(figsize=(2,2))
sns.scatterplot(y="Words", x="Counts",
data=common_words_odyssey)
plt.show()

print("2.2: Scatterplot of the most common words in Iliad: ")

common_words_iliad =
frequent_iliad_word_counts.most_common(10)
common_words_iliad = pd.DataFrame(common_words_iliad, columns=
['Words', 'Counts'])
plt.figure(figsize=(2,2))
sns.scatterplot(y="Words", x="Counts",
data=common_words_iliad)
plt.show()


print("-----")
```