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Sounds and Music of the Vikings

Understanding the Younger Iron Age
Scandinavians Through Their Instruments

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Abstract

This master thesis explores sounds and music in Younger Iron Age Scandinavia. I will discuss the use of music archaeology as a discipline to help understand the meaning behind and of Viking Age music and sounds. The aim of this thesis is to research the music traditions of Younger Iron Age Scandinavia by analysing their sound-producing devices and therefore elaborate on the connection between academic and artistic interpretations of historical instruments and music.

My assessment is based on archaeological material found in burials over the Southern half of Norway, which contain sound-producing devices. This data has been comprised into a dataset for analysis. Textual and iconographic sources are also key components in understanding the music of the era and region. I will use both Snorre's sagas and the 'Codex Runicus', a Danish law book from the 1300s, to help structure an idea of what the music sounded like, as well as determine the meaning of these sounds and its effect on Old Norse people.

Music archaeology is a reasonably new subdiscipline of archaeology, and the topic of sounds and music of Younger Iron Age Scandinavia has not yet received the academic attention it deserves. I am glad to be able to contribute to this topic in a meaningful and hopefully influential way.

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This paper would not have been possible without these individuals

Language and spellings

Many of the sources used and locations mentioned in this paper are Norwegian, Old Norse, another Scandinavian language, or other European languages. Therefore, some of the source material will feature quotes that have been translated into English for consistency within this paper, which might alter the quote in some minor ways from the originals. However, the chosen translations have been carefully selected and are from verified sources. If the translator is not specified, then they are my own translations.

Secondly, many names for Scandinavian locations have different names in English, differing completely in spelling or pronunciation from the original Scandinavian language. A prime example is the capital of Denmark, Copenhagen, named København in Danish. The anglicised names, if available, will be used. This same format shall also apply to the names of historical individuals. However, in cases where the spelling of a name is more known in a specific context, I will choose the best fit for this paper. For example, I will use the Norwegian form for the frequently used Icelandic historian and poet, Snorre Sturlason, who is known as Snorri Sturluson in Icelandic and English, because I am using a Norwegian translation of his work.

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Chapter I – Introduction

I.1 – Aims and Objectives

Aim: What can we learn about the music traditions of Younger Iron Age Scandinavia through analysing their sound-producing devices, using musicological and experimental methods?

Objectives: How did the culture and traditions of Younger Iron Age Scandinavians affect their music and sound, and vice versa? What ‘value’ does music archaeology have which contributes to 1) current academic discussions and 2) modern artistry.

I.2 – Defining the Thesis

This thesis will have a geographic focus on Younger Iron Age Scandinavia; however, the primary archaeological evidence will come from burial sites located in Southern Norway. The dataset created to aid my research will reflect this. Archaeological evidence from other Norse regions will be referenced and discussed, but not included in the dataset.

It should be assessed that when stating the term ‘instrument’, I am referring to two different categories, either sound-producing devices or musical tools. A sound-producing device, such as the rattle or the bell, is named so because it is not clear from any historical record that this instrument primarily functions to produce music, but rather a single sound. In comparison a musical tool is an instrument that historically indicates an ability to form and shape its sounds into a melody, such as the flute or lyre.

A final point to define is the use of ‘Viking’ or ‘Younger Iron Age Scandinavian’. These terms, although fundamentally different, I will use interchangeably. This is because the Vikings are representative of Younger Iron Age Scandinavia and are indicative of a peak in the time-period and in this region. Furthermore, all Viking music pertains to the Younger Iron Age and the musical archaeological evidence between the two terms is indistinguishable. It should also be mentioned that when either Vikings, Younger Iron Age Scandinavians or Norsemen are mentioned, I refer to

Germanic Scandinavians and not to other subgroups such as the Sami people who also inhabited Scandinavian regions at the time.

I.3 – Viking Music, as We Know It

In popular culture there is a certain notion of what Vikings were like. If you were to ask 'the common man in the streets' to describe the Vikings, you would likely get an answer along the lines of raw, brutal, savage and/or masculine. Perhaps in many cases, asking to define the music of the Vikings pertains to a similar response. To what extent this is correct is impossible to confirm or deny. However, the fleeting concepts of what ancient Scandinavian music sounded like, I would argue, is more complex than what can be trivialised to some vague words based on our modern points of view.

The modern idea of what Viking music sounded like has been shaped by popular culture over many years. With elements of traditional folk music combined with musical concepts that feel, to the Western audience, "brutal". For example, we can look to video games or TV series that represent Iron Age Scandinavia, in some fashion, and immediately understand the cultural identity which the music is trying to help portray. A good example of this is the show 'Vikings' by Octagon Films and Take 5 Productions. Whilst to many this show is agonisingly historically inaccurate; it makes an interesting interpretation of Viking life. The music in this TV series sounds unmistakably 'Viking', with a composition of deep strings, heartbeat like rhythms and low pitch male or husky female voices, which feeds into, and therefore embodies, the stereotype which popular culture has in turn created. Another example of representation of Viking music in popular culture is the iconic soundtrack from the game 'Skyrim', developed by the studio Bethesda. This too contains powerful men's voices in a male choir and is perhaps designed to reflect the Viking-like people and culture within the game. The music also emphasises the popular cultural idea of what Vikings sounded like.

Our knowledge on Viking music is very limited. The literary sources on the topic are mostly written a few hundred years after the time-period they are writing about, such as Snorre Sturlason's sagas that were written in the 1200s. The sagas documented events, occurrences, and mythos from the 900s and 1000s. Furthermore,

musical mentions are sidenotes and not the main focus in any of Snorre's texts. Still, the Sagas do mention sounds, music, and musical instruments on numerous occasions. Other sources include texts that would be considered contemporary for its time. The "problem" with these is that they are from descriptions from the 'outside'. The most prominent example of this is the Andalusian scholar Al-Tartushi, who described the Vikings and their music from his perspective. He did not view the Scandinavians of the era in a favourable way, as will be explored further in Chapter III.2.

To reiterate, I would argue that the concepts of what Viking music sounded like is shaped primarily by our modern ideas and notions of what the Vikings were like. This perception of who the Vikings were is based on literary sources and archaeological evidence. Perhaps also by the nature and climate in the North as well, as there is frequently an overlap in musical ideas in both the representation of Viking music and music associated with Norwegian nature. What we do know about Younger Iron Age Scandinavian music is from the knowledge derived from instruments found in the archaeological record as well as the literary sources. The instruments found in Scandinavia can give us some idea of what the music sounded like tonally and what the general composition of Viking sounds consisted of. The instruments in question will be discussed at length in Chapter III.1. and V.1.

So what? Who cares? Well, musicology and research into historical music bridges a gap between the scientific and cultural benefits. Music, like any other idea or concept, has evolved from what came before it. Our modern music is influenced and inspired by previous artists and their work. Contemporary music often draws inspiration from, for instance, folk music. An example of this in a Scandinavian context could be Eurovision winner Alexander Rybak using traditional Norwegian musical concepts and expressions in his contemporary music via the use of the fiddle. Traditional Norwegian folk music would, by this logic, also have evolved from what came before it and so on as will be discussed further in Chapter V.3. Furthermore, our music today would likely not have been the same if it weren't for ancient music. In addition to this, I hope that research done on ancient music can be directly used by musicians today to create new musical expressions as well as further the art that is musical reconstructions.

To summarise, I intend for this thesis to look in depth at Younger Iron Age Scandinavian music to reveal elements of what it sounded like, what it meant and what we can learn about the ancient Scandinavians through their sounds. Furthermore, I would like to draw a parallel between music from 'then' and 'now' and discuss how the study of ancient music is relevant to us today. This will ultimately bridge the gap between artistic and scientific reconstructions. The benefits of this are not mutually exclusive. Music developed in the present which has been inspired by research into Viking sounds can in turn assist further exploration conducted by the scientific community and vice versa.

I.4 – Ethics and Biases

The topic of archaeological ethics is a huge one that impacts most researchers in one way or another. This is not strange considering archaeology's colonial history. The obvious ethical issues are within cases that involve human remains, culturally significant sites or items, and questions about preservation. Another topic that is somewhat of a minefield is that of ethnoarchaeology, which I will further get into, later in this chapter. Naturally, there are international treaties in place to regulate and define the ethical framework, such as The World Archaeological Congress (WAC), that gather annually to, among other things, update archaeological practice guidelines and policies (WAC, 2021). UNESCO also sets regulations in place in order to protect cultural property (UNESCO, 2019). However, it should be noted that archaeological ethics are not universally the same globally and will vary from culture to culture (Chadwick, 2012). Guidelines for ethical use are relevant in music archaeology as well as in any other archaeological discipline.

'Bad archaeology' is a term often used within malpractice or abuse of archaeology. This could be for instance using an artefact or a set of them to forward a narrative. For example, various 'out of place' artefacts such as the Mexican crystal skulls being a catalyst for alien speculations, which modern analysis concludes as being made in 19th century Europe (Jenkins 2004, p. 217). Or Erich von Däniken's theories revolving around ancient astronauts based around various artefacts and sites from different geographical locations and epochs (Grim 1982, p. 278-288). Both of

which are easily disproved when assessed in their entirety. Theories like von Däniken's are problematic as they cherry-pick a small number of sites or artefacts as evidence in one's favour.

“... Flamboyant pseudoarchaeology of the type espoused by von Däniken and Hancock will always appeal to people who are impatient ...”

- Archaeologist Brian Fagan described this phenomenon (Fagan 2001, p. 17-18)

One may again ask; so what? Ultimately is it irrelevant what people believe about the past? What is the harm? Does it matter if someone believes in more fantastical explanations for historical phenomena? At the end of the day, are they just eccentric beliefs which are no more harmful than homoeopathic medicines or “religious miracles”? Whilst in some cases it is insignificant, other times the understanding of the past can directly affect the present which can be dangerous. Most violent examples of this are extremist groups using the past or historically religious texts to warrant their current actions by mixing up the science of archaeology with emotions. An example of this could be the founding of the state of Israel based on beliefs derived from ancient texts. This directly conflicts with the equally devoted beliefs held by the Muslim population of Palestine, whose principles are based on a different, yet similar, book. This is an example of the lengths people are willing to go to or even die for, due to the misuse of archaeological evidence. Whilst this paper is not a political comment, it is still necessary to remain impartial and objective when discussing and analysing the evolution of an ancient culture.

Before reading this research paper it should be stated that I am a white man, born and raised in Norway. I grew up in a relatively conservative home and would by many accounts be considered privileged. I have always been proud of my culture and had a curiosity for history. If it were not for my interest in my own Scandinavian heritage, I would not have written this paper. However, I am aware that my research can only be written through the lens of a liberal modern Western male from the city.

That being said, one of the goals in this research is to attempt to interpret Viking sounds and musical traditions as fair to the people in question as possible, based on the various evidence available. I have had this objective in mind whilst choosing the

methods and theoretical framework for this thesis. This includes phenomenology and sensory approaches, which will be discussed at further lengths in Chapter II and Chapter IV.

To conclude, ethics has close ties to post-processualism and modern archaeological theory (Chadwick, 2012, pp. 179-188). It is the awareness of ethics within this field that has helped legitimise archaeology. Before the realisation that the subject required an ethical evaluation, archaeology was more about finding and displaying artefacts, less so about the people. Today this is considered unethical behaviour.

Chapter II - Methods and Theoretical Framework

The theoretical and methodological points of this paper are threefold. Firstly, the thesis's topic is music archaeological. I will use theoretical ideas from this discipline as the research yields extensive insight into the musical pasts of previous civilisations. Secondly, when discussing instruments from Younger Iron Age Scandinavia, we are dealing with a large amount of empirical data. The most logical method for collecting, analysing and discussing this archaeological material in depth is to create a dataset, which will be discussed at length in chapter V.1. Lastly, phenomenology and sensory archaeology is a frequently utilised theoretical framework in music archaeology and experimental archaeology alike, and focuses on the human experience, which is key when discussing sounds and music in a historical setting.

II.1 - Premises and Dataset

There has not yet been developed a dataset regarding musical instruments from the Younger Iron Age Scandinavia. The archaeological material in question for this thesis are the musical instruments found in burial sites as grave goods. Therefore, the intention with the dataset in this thesis is to provide structure to the musical cultural material discovered from the Younger Iron Age in Norway, to hopefully discover aspects previously not discussed. The dataset also produces specific numbers and statistics which give ground for more scientific reasoning rather than mere speculations.

The dataset was created using publicly available data from large collaborative websites and databases, collected for cataloguing the archaeological material in Norway across all museums and archaeological institutions. The specifics of how the dataset was created and utilised, as well as the results and analysis, can be read in Chapter V.1.

II.2 – Music Archaeology

This thesis is a music archaeological paper. Consequently, a music archaeological mindset and angle will be applied to both my research and discussion. This being the case, there are a few pitfalls and issues with the development and foundation of the discipline which must be addressed. The discipline today has evolved into an interdisciplinary study which has both a broad understanding for the culture and traditions behind the music, as well as an in depth focus into the emotions and ethnomusicology, or more human aspect, of the ancient peoples.

II.2.1 – Pitfalls in Music Archaeology

Music archaeology explores musical identities and concepts associated with a certain society or group of people at a geographical location, at a specific given time. The perception of music archaeology was heavily affected by the time the respective publications were written, for instance influenced by a political and social narrative that was common for its time.

Although music archaeology was not conceptualised until the 1970s, the first attempt to bring a comprehensive overview of primitive music to the general public in the Western world was as early as the 1800s. As seen in Rowbotham's '*A History of Music*' (1885) and Wallaschek's '*Primitive Music*' (1893). Then, later, Parry's '*The Evolution of the Art of Music*' (1920) was published in the name of science. Unfortunately, similar to the majority of other social sciences in the 19th and early 20th century, anthropology, history, and the early form of archaeology were fundamentally ethnocentric and would be considered racist by modern standards (Kolltveit 2010, p. 103-108). Similar angles can be observed in the context of Nordic musical research history as well (Kolltveit 2010, p. 60-80). The methods utilised would have been searching for results that fit the nationalist narratives of their contemporary era, completely oblivious to the social organisation we now know previous humans were capable of. Perhaps there was also a general ignorance and lack of knowledge regarding the subject of musical and social capabilities.

The same attitude was not only present in the academic circles, with scientific publications, but was also reflected in other parts of society at the time. From operas to popular media such as movies and fiction. For instance, you can look at any 'oriental' scene from any movie from the 60s. (example: *Giants of Thessaly*, any Sean Connery Bond movie, or later on; *Indiana Jones*). Ideas of what is 'ancient' often have the same associations as 'strange' or 'foreign' from a Western perspective. Ancient music is more diverse than just belly dancing (*Raqs Baladi*), unlike what popular media often portrays.

In the early publications on the topic of ancient music, it was assumed that music was a universal language, and not culturally specific, which it actually is. The perspective that Western classical music was the 'correct' or 'truest' form of music is easily disprovable. The Western concepts of harmonies, tonic progressions and 4/4-rhythms, for example, would have been discovered universally by humans everywhere if this were the case. Instead, the Western musical pallet, if you will, is one that has developed in its particular direction over generations upon generations. Similarly, equivalent musical complexity and conceptual depth to Western music has been found all over non-Western places and societies. For example, Ancient Chinese music over several thousand years developed its own musical theory such as a 'twelve-tone musical system' (Sterckx, 2000, 1–46; Davison; Reed, 1998, p. 72). Or pre-Columbian Mesoamerican music which advanced and developed completely independently from any Western contact or influence (Houston and Taube 2000, p. 261-294). Instead of thinking of music as a universal language, a more accurate description is perhaps as a universal human behaviour.

Musical identity and the revival of traditional and historical music has had a central role in European countries in the 19th and 20th centuries. The sense of musical continuity found in Western cultures, that one type of music originates from another, has further driven this development of identity around music. An example of this is the Norwegian identity, or rather the need thereof in the 19th century. After the Danish union ceased in 1814, a search for 'what is Norwegian' began. This sparked, among other aspects, an architectural pursuit resulting in the Norwegian dragon style in the latter half of the 19th century, as seen with the architecture of Frognerseteren in Oslo. The Norwegian identity was built on the glorified remnants of what Norway was, or believed it was, before the union. The sagas, the Vikings and a more "equal" society

without the European nobility and aristocracy became what defined 'Norwegian'. In the 1800s, drinking horns became the standard trophy for large sporting events, and many households held these types of 'Viking Replicas' for decorating. The same goes for what is considered to 'feel' Norwegian in the musical world. Typically horns and fiddles playing microtonal music, meaning utilising notes with smaller intervals than a semitone (or a tone that falls between a white and a black key on a piano), ideally accompanied by breath-taking mountain landscapes, maximises the national feeling. Finding an identity and seeking heritage has many advantages, the same way cultural heritage in any form has its benefits to society. However, it can indeed be used to forward less than healthy ideals, such as nationalism, and researchers have a certain responsibility to keep this in mind and remain objective.

Similar movements of finding identity can be seen all over Europe as different countries were formed, gained independence and/or gained their 'cultural awareness', which might not have been present until then. This lack of awareness could either be because of oppression or through poverty and a lack of education. Few things are a stronger tool than music to unify or create a feeling of identity and group cohesion. For evidence of this, we need to look no further than any national anthem or even a football chant. Earlier archaeological publications that cherry-pick examples to fit their political and social narrative and use as a standard for the cultural identity, do not recognise the harm this causes to the real understanding of musical identity. All musical expressions from the time period in question must be acknowledged and reflected upon.

Another point to make is that in the early research of music evolution, it was assumed that music was written by men, perhaps due to literary sources from the Byzantine era onwards primarily featuring male composers, creating an association between gender and music (Touliatos-Banker 1984, p 62). On the contrary, it is sometimes argued that the first ever music could likely have been lullabies sung by mothers to their children. However, this too is following modern, or at the very least 20th century, ideas of gender roles. There are, naturally, little to no literal or archaeological sources to confirm the gender of a musical origin. The relevance of this is a lesson in assumptions within the field of music archaeology.

While it is academically valid to focus on a specific ethnic group, especially within archaeology, it is necessary to keep a few things in mind. Perhaps most importantly for music archaeology, the connections and similarities to other communities must be considered, and external influences of the group in question must be acknowledged. Compromising academic integrity over what might be the most appealing for a general audience must be avoided. For instance, stating that the ancient Scandinavian musical traditions influenced the rest of Europe is “sexier” to a Scandinavian audience than the other way around, which perhaps was more likely. Whilst elements of both these narratives might be the case, it is again important to avoid cherry-picking the arguments that please.

To summarise, the danger of studying ancient music is that it is initially based on ethnocentric ideas that, to some extent, are still present today. It is easy to fall into a trap of discussing ‘them’ and ‘us’, creating bias. The research is also vulnerable to abuse, as the results can be skewed to fit certain political narratives, as unfortunately happens frequently when researching Viking heritage. This must be fought by attempting to write as fairly and objectively as one can, not only by checking for current biases but also noting the misconceptions already assumed in previous research. This being said, the topic is still one that should be explored, as it will deepen our understanding of past people, and can contribute to the modern world in artistic and academic ways.

II.2.2 – Music Archaeology Today

Archaeology is interdisciplinary in nature, and features disciplines branching in many directions. Music archaeology is the interdisciplinary study that combines musicology and ethnomusicology with archaeology. Music archaeologist Adje Both defines the discipline as follows: “*In its broadest sense, music archaeology is the study of the phenomenon of past musical behaviours and sounds*” (Both, 2009, p. 1).

Music archaeologists give importance to studying sound-producing devices, ranging from musical instruments to more percussion sounds such as bells and rattles. The study of these artefacts is relevant for reconstructions and, in turn, to attempt to

reconstruct ancient music and soundscapes. Ideally, these archaeological reconstructions will also be supported by textual or iconographic evidence.

The archaeological context of sound-producing artefacts can also aid in the interpretation of an instrument's practical use. For instance, if an instrument can be associated with a certain gender, status or other artefacts, hypotheses can be formed. The same way hammers being found in certain types of burials can tell us something about the individual it was buried with, the same concepts can be applied to burials featuring musical instruments.

The reason why reconstructions have a valuable input in the academic debate is because they can provide cultural insight to the item's functions and in turn shed light on the everyday life of past people. Furthermore, the reconstructions are done in a scientific manner, utilising scientific theories and methods to produce as valid empirical data as possible. In addition, the results of reconstructions and experiments conducted on them can provide understanding of not only how they were played, but also how music was sung, or melodies composed. However, ultimately, without any documented evidence, there is no way we will ever know what the music sounded like or how it was played. For this reason, the reconstructions will always be interpretations. That is where the limitations of music archaeology lie. However, one may argue that this limitation encourages creativity and allows the musical reconstructions to belong to everyone and may be used by any musician for artistic purposes. Meaning, where the academic benefits end, the artistic benefits start.

The discipline of music archaeology is ever growing, especially in later years. As in other corners of archaeological academia, music archaeology develops along with technology. Neurological research on music's effect on the brain from an evolutionary standpoint is currently pushing the field forward. Research on music's effect on emotions, and not to mention cognitive abilities, gives insight into how music would have affected our ancestors, as people in the Iron Age would have been virtually the same as us, from an evolutionary standpoint. Research in this field uses fMRI and PET scans to measure and observe brain activity while being exposed to various forms of music, and while performing tasks with and without music. These research papers have concluded that musical memory involves both implicit and explicit memory systems. Research on music and neurology has proven the 'unforgettable' properties

of music, as Alzheimer's patients show a drastic increase of brain activity stimulated by music. This type of research demonstrates music's deep evolutionary roots in the human brain (Baird and Samson 2009, p.85-101). This is just an example of the plethora of neurological evidence that shows music is quintessentially human. On a more relatable note, most people have experienced how music can drastically affect one's emotions. Even this example of 'getting chills' from music has scientific backing (Blood and Zatorre 2001, p. 11818-11823). Therefore, research into the music of an ancient culture could lead to a developed insight into the behaviour of the people from a neurological standpoint.

Developments in data technologies also contribute to the music archaeological discipline, as digital sound design can create reverberation, advanced synthesisations, and even AI-compositions. Many of these tools are even open and free to the public such as 'OpenAI' which is an AI research and development company that shares all their code with the public to ensure that artificial intelligence may benefit all disciplines (OpenAI, 2020). Therefore, with accurate application of data into a system such as OpenAI, archaeologists should be able to create an interesting input on academic reconstructions of ancient music.

Not all music archaeologists work in the same manner. Different researchers in different areas studying different periods will face different problems and will approach their challenges with a multitude of methods. The common goal however is to comprehend the musical behaviours of past people. Music archaeology frequently uses and is aided by experimental archaeological research. Which in short is to apply scientific methods through experiments to verify a theory's plausibility (Coles 1973). The experimental projects will benefit from having a team with a diverse set of backgrounds, from historians to musicologists to even chemists, to name a few. For example, in a project based on ancient singing, a physiologist can give helpful input on human tonal capacities and a musicologist will provide knowledge on musical theory. This can offer a problem, namely that different research using different methods can yield different results, which should be taken into consideration. On the other hand, the various approaches, methods, and outcomes will heighten our understanding of musical behaviours of the past. My previous research in the field of experimental archaeology as well as my musical background as a percussionist, adds value to this discussion of music archaeology and sound.

II.2.3 – Ethnomusicological approach

Ethnomusicology is the study of music from the perspective of the social aspects of the people who make it. Ethnomusicological approaches are designed to tackle cultural, social, material, cognitive, and biological dimensions, or contexts, of musical behaviour, as well as map the sound components in question. To put it simply; ethnomusicology is the science of studying a culture, or group of people, through its/their music.

As the ethnomusicological approach is based primarily on studying music that exists today and can still be observed or listened to in one way or another, the method is problematic as a tool for researching unobservable music (see ‘observable and unobservable music’ in II.4). Unfortunately, the archaeological evidence of Younger Iron Age Scandinavian music is very limited. For this reason, we cannot directly examine Viking music and draw conclusions using the ethnomusicological approach. However, we can attempt to reverse engineer the music with the elements we do know about their social abilities and material culture. A ‘reversed-ethnomusicological’ approach.

My argument is that if we discuss and understand why the people of the time period in question behaved in a certain way, we can make suggestions about specific components of their music and sounds, using examples from other ethnomusicological conclusions and analogue musical cultures. For example, from the knowledge that 19th century American ships crossing the Atlantic spawned sea shanties in the men on board, we can speculate a similar behaviour on the longer sea voyages indicative of ancient Scandinavian people.

II.3 – Primary Theoretical Framework

In order to create a structure that supports the analysis and discussion of musical instruments and sound-producing devices, I shall define a theoretical framework which includes theories and methods which will increase the efficiency and uniformity of the

research. In order to explore Viking sounds, sensory archaeology and phenomenology is a natural approach to the topic.

II.3.1 – Sensory Archaeology and Phenomenology

Sensory archaeology is a dynamic discipline within archaeology that focuses on examining the human experience. Phenomenology is a method of using sensory experiences to interpret archaeological sites and cultural landscapes. Phenomenology aims to be a useful tool to discover more about extinct peoples and how they interacted with their surroundings. Christopher Tilley, considered to be the father of phenomenology, argues in his publication in 1994, that *“simply by looking at two-dimensional depictions of a landscape, such as on a map, archaeologists fail to understand how peoples living in hunter-gatherer and agricultural societies actually relate to those areas”* (Tilley, 1994). Tilley encourages a hands-on approach to academic archaeology where scientists should enter the landscape they are studying and use their senses of smell, hearing, and sight to learn about how the people in question would have experienced it. It is important to note that senses would be interpreted differently in different societies. For instance, in some Asian languages today green and blue are considered different shades of the same colour (Crystal 1997, p. 106) and an Aboriginal language in Australia has no concept of left and right, or direction relative to self, but only to coordinates (Deutscher 2010).

Both the sensory discipline and phenomenological method have value in the context of music archaeology, as music by nature is sensory. Therefore, these types of mindsets are a crucial framework for my research. Although I, myself, am not able to touch, hear or play the Viking instruments in person, I will assess the first-hand accounts of researchers who have, as well as use a phenomenological approach by discussing what the instrument meant to the Vikings and how the experience of using the instruments would have affected them. This will fall alongside the more scientific evaluation of the distribution of these finds within my dataset.

II.4 – Definitions and Terminology

This chapter exists for two primary reasons. The first of which is that this is an interdisciplinary paper, where archaeology and musicology meet. Most archaeologists do not have an extensive understanding of musical concepts and terms and vice versa. However, this is a master thesis in archaeology, and the reader is assumed to understand archaeological theory and definitions. For this reason, archaeological concepts will not be explained at the same lengths that the musicological and music archaeological terms will be.

The second purpose of this chapter is to clarify some terms I found necessary to invent to define some abstract concepts that, to my knowledge, do not have definitions. These terms exist to simplify and compact abstract ideas. These terms do not exist from before because of the narrow crossover that is music and archaeology, especially when exploring 'dead' music and cultures.

Why definitions are important: To highlight similarities and discuss differences. To draw clear lines about what is being discussed, to stop the text from becoming fleeting and non-concrete (Gansum 2004, c. 5, p. 1).

Musical terms:

Ethnomusicology ~

Ethnomusicology is the study of music in its social and cultural contexts. Ethnomusicologists examine music as a social process in order to understand not only what music is but what it means to its practitioners and audiences. Ethnomusicology is highly interdisciplinary. Individuals working in the field may have training in music, cultural anthropology, folklore, performance studies, dance, area studies, cultural studies, gender studies, race or ethnic studies, or other fields in the humanities and social sciences (SEM 2022).

Ancient music ~

The musical period after prehistoric music which refers to musical cultures that developed in literate civilisations of the ancient world. 'Ancient world' in this

context refers to literate civilisations that could record history extending as far as to late antiquity.

Dead music (devised term) ~

When I refer to 'dead music' it is similar to 'ancient music'. Dead music describes any music that no longer exists or originates from a society that is extinct. The musical equivalent of 'dead languages' like Latin or Ancient Greek.

Observable and Unobservable music (devised terms) ~

For the interest of making it clear what I discuss, I will use the terms I have named 'observable music' and 'unobservable music'.

Observable Music ~

Observable music can be one or more of three things:

1. Music that has been physically recorded technologically and can therefore be replayed as one wishes (example: CDs, LPs etc).
2. Music that is/or can be performed live (example: tribal performances, oral traditions, improvisations etc)
3. Music that has been transcribed on paper, or similar, and is, therefore, reconstructable (example: notes).

Unobservable Music ~

Unobservable music is that of which we have no tangible way of knowing exactly what it sounded like. We have instruments in the archaeological record which make sounds, and so we can then observe the sound, but not the music or the context of the sound.

Contextual Sound (devised term) ~

Contextual sound is what I call sounds put in context. For example, a flute playing its part in a ritual, or a greater performance, is sound in a specific context. A lur found in archaeological circumstances, although can still be

played, lacks context for the sound. The context can be the sounds' significance in its respective contemporary age, or purpose i.e., a drums role in a band.

Harmonics (overtone) ~

A tone with a frequency greater than the fundamental base tone, which harmonises with the frequency of the lowest tone.

Archaeological terms:

Music Archaeology ~

An interdisciplinary field that combines Archaeology with Musicology, to assess previous peoples' musical behaviour, sounds and their musical culture.

Culture ~

This might seem to be an unnecessary term to define but it is a term that is somewhat disputed. This is because there are many grey areas, such as when a group of people can be identified as a culture. The term is surprisingly abstract. For instance, 'Roman culture' can mean many different things based on various factors such as location, time and ethnicity. For example, the culture of the early Roman Republican days differs greatly from, for instance, Roman Britain in Rome's Imperial days.

For this thesis, the term 'Viking culture' and 'material culture' will be used reasonably liberally. 'Viking culture' will entail everything included in the life of a Younger Iron Age Scandinavian, including their art, technology, languages, social structures, religion, rituals etc. 'Material culture' refers to whatever archaeological evidence is left behind from the people in question, such as instruments, tools, weapons, art, buildings, literary sources, clothing etc.

Ethnoarchaeology ~

This is the ethnographic study of peoples from an archaeological point of view and for archaeological reasons. These studies are typically conducted on material remains from the society in question (Sadr, David, and Kraer 2002).

Direct Historical Method ~

Studying living societies that are closely related to the culture in question, either genetically or spatially. This is a primary method of ethnoarchaeology.

Post Processualism ~

This is a movement in archaeological theory which emphasises the subjectivity of archaeological interpretations. Embracing a wide variety of theoretical points of view.

Mound ~

Mounds in Nordic archaeology can be separated primarily into two categories: Røys and Haug (Bøe-Sollund 1996 p. 32). There have been suggestions to create further separations and definitions such as requiring the height of the mound to be at least 1/10th of the diameter of said mound (Baudou 1968:26; Løken 1974, p. 53, 60; Ringstad 1987: 65-78). The problem with this, however, is that measuring the height and width of a mound can be hard to determine without an excavation, as the ground surface and the base of the mound will not always align. Furthermore, a mound will compress over time, and different mounds will compress differently depending on its masses and fillings (Gansum 2004, #). Both definitions refer to constructions, meaning of man-made origin.

Røys (pile) ~

These are mounds constructed solely from stones (at the time of construction, not considering the organic material that will cover the mound over time) (Gansum 2004)

Haug (mound) ~

These are mounds that consist of loose soils and rocks/stones (Gansum 2004).

Burial ~

Although this seems self-explanatory, a burial can vary immensely and so can the definitions. For instance, the word 'burial' comes from 'to bury', which can be traced to Germanic 'burgjan', meaning 'to conceal' or Old Norse 'byrgja'

meaning 'to close, shut, hide' (Webster's dictionary). Webster's current definition of 'bury' means to conceal something in dirt. With this in mind, it becomes clear how undefined the word 'burial' is in archaeology. As it is often referred to as both a location where a dead individual or animal is put to rest, but also the ritual or ceremony that is to bury someone. This raises several questions. For instance, what if an individual has been removed from a burial, or a burial is temporary, is it still a burial? Further, will a burial have to be one where an individual has been put to rest on purpose or can it be wherever a person has their final resting place. In addition, diverse people at different locations and moments in time have buried their dead in vastly different ways and as a result the burials have differed. This means that different peoples with different backgrounds will have different associations to the word burial.

With all this being said, what makes a burial in an archaeological circumstance? The dissatisfying answer is that it depends on the individual archaeologist. Terje Gansum solved this problem in his PhD dissertation '*Hauger som konstruksjoner – arkeologiske forventninger gjennom 200 år*' (2004) by having certain conditions for what counts as a burial in his research. Before doing this, he points out that our cultural frame of reference, being of a Western Christian origin, will not be the most practical when discussing pre-Christian burial traditions. He stresses that before we can grasp pre-Christian traditions, we need to keep the perspective on individuals and cultures as open as possible. He states that as scientists, we need all the distance we can get from our epistemological limitations and look at things with a 'fresh pair of eyes'. Both anthropology and ethnoarchaeology grants us a greater understanding and wider range for new concepts, and therefore removes any room for predisposed, although perhaps valid, presumptions within these dominating theoretical frames.

Some define a burial as a location where the dead, or the deceased's remains, are deposited (Næss 1996, p. 12). A problem with this is that there exist human remains found in circumstances that we would not call a grave or burial. For instance, we would generally agree that charred human bones found in a pole hole or fire pit are not a burial. A relevant question would then be is a burial defined by its purpose or its structure? To meet a compromise between

these two factors, I propose a definition akin to a location with the primary function being where the dead, or the deceased's remains are purposely deposited with an intended permanency. This can rule out where some individual might have died or been murdered and never found, which would be more of a crime scene than a burial by my classification. This definition also rules out culturally specific norms that may skew the data. This definition is by no means a flawless one. However, it will function well for the material in question for this thesis. For this reason, the above-mentioned definition will be used when analysing burials for this thesis.

Chapter III: Material

When we analyse unobservable music, we are completely dependent on the sources available to us. The most important source in this case is the archaeological material available from the Younger Iron Age Scandinavia. This means the musical instruments and sound-producing devices found in Norse contexts. There are also iconographic examples bound to some of the instruments of the era which can give clues to how the instruments were played and when they were used. Whilst the literary sources are somewhat few, they too are crucial tools in supplying circumstantial evidence for the instrument's use, symbolic meaning, and contextual sound. To summarise, material as archaeological material, supplemented with iconographic and literary evidence, is what forms the basis for analysis.

III.1 – Archaeological and Iconographical Material

The archaeological material available to us, which can tell us something about the musical culture of the Vikings, can be found primarily in Sweden, Denmark, and Norway. However, other Norse settlements have relevant material culture that can aid in analysing the music of the era, such as Iceland and Great Britain, primarily the town of York. Instruments from these annex Norse locations should be acknowledged and considered as they are culturally relevant. However, the vast majority of artefacts of the relevant type is found in Scandinavia proper. All instrument types from all these regions will be discussed and analysed, however there will be a larger emphasis on the Norwegian archaeological record, from where the material used in my dataset is exclusively collected. Some geographical limitations must be set to realistically fit within the format and limitations of a master's thesis.

III.1.1 – Burial Mounds and Dataset

To aid in analysing the distribution of instruments in Southern Norway from the Younger Iron Age, I have created a dataset based on all the burials from the mentioned

period and area. The analysis of this data will be part of the primary discussion in Chapter IV and V.

The dataset is based on the data publicly available on Unimus, HUMGIS and Askeladden about the excavations that had commenced in Southern Norway. The sites have been filtered to only include grave material that is dated to the Younger Iron Age. Furthermore, the sites have then been sorted by the material found in the burials. At this stage all burials that include musical instruments and/or sound-producing devices have been sorted through to create a comprehensive list of which instruments from this time period have been found and where they were located.

The dataset was created to allow analysis of the archaeological material in a quantitative manner to discuss patterns of distribution. This in turn, will enable scientifically grounded discussions about what the frequency of different types of sounds in different geographical locations could have been, as well as what sounds might have been considered 'universally' Viking. This will be thoroughly explained and discussed in Chapter V.1.1.

III.1.2 – Instruments

Archaeological material, i.e., musical instruments and sound-producing devices, in the Viking context are almost exclusively found in burials. The archaeological record gives us an insight into the large variety of Iron Age musical instruments. Archaeologist and historian Oluf Rygh, who is considered one of Norwegian archaeology's founders, is immortalised through his cataloguing of archaeological artefact types found in Norway. His catalogue, *'Norske Oldsager'*, features drawings as illustrations of the archetypal forms of various item types. 'Rygh's work is considered the 'gold standard' in Norway for archaeological categorising and his artefact record is a primary source when discussing musical instruments from this time period.

In present-day terminology, there were instruments that could be categorised as percussion, string, and wind instruments and I will list them in terms of these contemporary categorisations. It is important to note that instruments at this time would

be perhaps looked at differently and would not have been labelled in, or as, a certain set of instruments, for instance, as a 'wind instrument'.

The archaeological record gives examples of instruments in the wind section. This consists of horns, flutes, pan pipes, the lur and potentially bagpipes. The horns would be billy goat horns, made from the horn of a ram, or cow horns made from a cattle horn (see Fig. 1). The

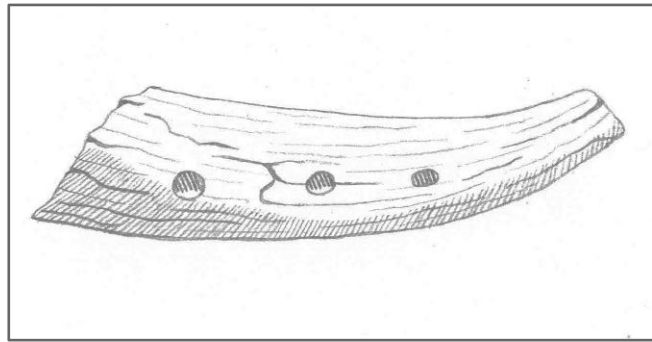


Fig.1. Illustration of a Viking Age billy goat horn, based on T6220. (By Olivia T. Peters)

tradition of crafting these tools has not been lost and they are still being made today, primarily for traditional Norwegian folk music, although the horn has become more of a novelty in the current era (SNL 2020). The horns were typically drilled into to create the tone holes, operating similarly to a flute. However, archaeologically, these horns are a bit problematic as the only one found in the Norwegian context is T6220, which was found in Trondheim in the early 1900s and has ambiguous dating. However, there are two cow horns found in Dalarna, Sweden, with more precise dating as far back as the 900s (Digitalmuseum 2021).

However, the evidence that is available for musical horns is the existence of iconographic evidence, namely the Bayeux tapestry. This 70-metres long tapestry depicts the events leading up to the Norman conquest of England in 1066, showcasing William of Normandy's challenge over King Harold II of England. On the tapestry a man can be seen playing a billy goat's horn. William and the Normans were of Viking descent, making this iconography relevant to the Norse musical context. The iconography combined with the known crafting traditions for these horns in the Northern regions of Scandinavia, makes its



Fig.2. Depiction of Heimdall blowing 'Gjallarhornet', from an 18th century manuscript. (Image courtesy of Wikimedia)

existence as an instrument in the era more than likely. Horns are also present in Norse

mythology, most notably 'Gjallarhornet'. This is a mythological horn played by the Norse god Heimdall, mentioned by Snorre in the Younger Edda, played to warn the other gods of the coming of ragnarok, the end of the world (Snorre Sturlason, p 47.) (see Fig. 2).

The flutes we know of were crafted from animal bones with holes drilled in to adjust the pitch, similarly to the goat horns. Flutes are one of the most common instruments to find from the Younger Iron Age. An extraordinary example of a flute is TS11985 (see Fig. 3) which was found during an excavation of a shipwreck in Træna in Norway. According to Unimus, it was found in the lower sections of the boat in a soup of quicksand and decaying organic material (Norsk Sjøfartsmuseum 1959). The organic material mentioned could be a culture layer type of soil which aided its preservation. The flute is even in good enough condition to be played. It was in fact played on the radio in 1959 (Norsk Sjøfartsmuseum 1959, p.7).

Panpipes might not give immediate associations to the Vikings. However, a pair of these were found in York, UK, dating to the 10th century, a time of a known Viking settlement, and were made from boxwood, a wood type common in England and Southern parts of Europe (Fig. 4). They have been named the 'Jorvik panpipes' in popular culture, referring to the Norse

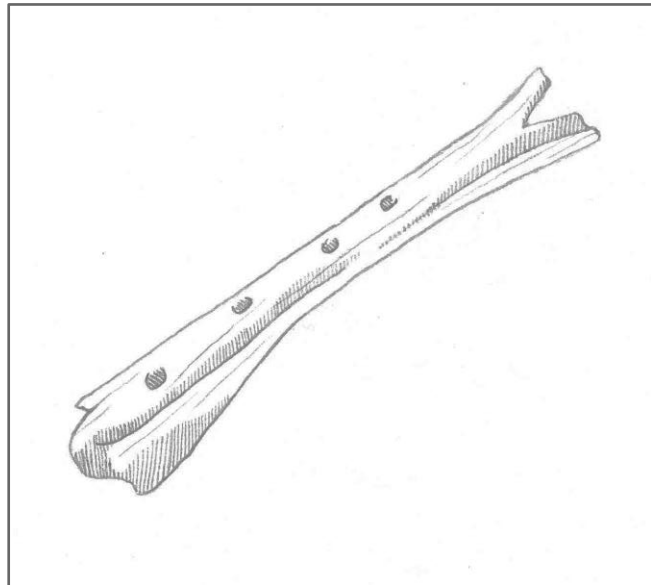


Fig.3. Illustration of a bone flute, based on TS11985. (By Olivia T. Peters)

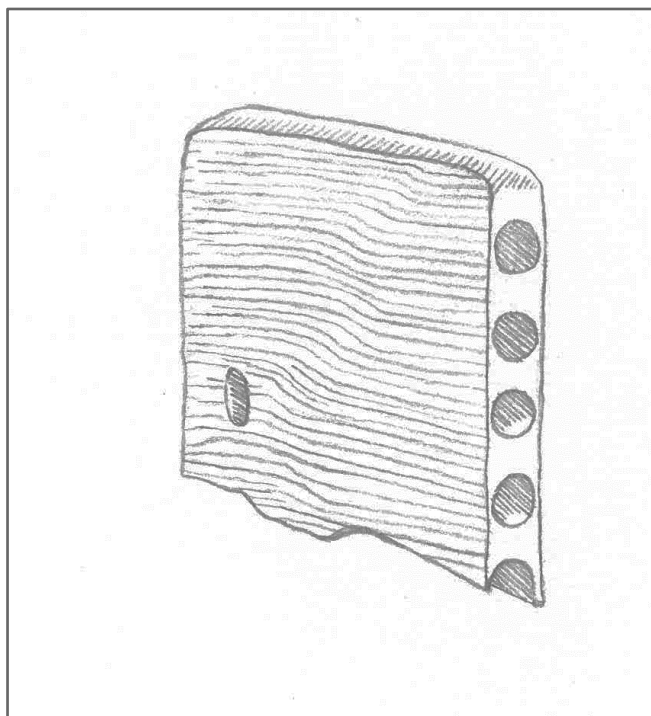


Fig.4. Illustration of a wooden pan flute, based on the Jorvik-pipe. (By Olivia T. Peters)

name of which York originates, Jorvik, roughly translating to 'Earthern Cove'. The Jorvik panpipe is the only one of its kind found in a Norse context. Originally, it is believed to have had seven notes, but only five of the tone holes are intact. Even so, the five remaining notes form a scale from high A to E (Watkins 2019). This instrument is symbolic for how the Vikings in fact settled in other regions, perhaps exchanging musical concepts from this migration, and showing that their reputation of pillaging other lands then returning home, whilst true, was not always the case.

Skalmejen, (or falsterpipe) named after the excavation site, is a fragment of a musical instrument that was found in Denmark. A similar piece from another skalmejen was also found in Sweden. It is not completely clear how it was played, as some scholars believe it was a flute, whilst others speculate that it is a part of what once was a bagpipe. The arguments for it being a type of flute are obvious, it is tubular, made from wood and features drilled in holes to adjust the pitch. Arguments for it being a piece of a bagpipe-like instrument is the similar mouthpiece and that the leather bag would likely have decayed over the last millennium buried in soils. The site where the specimen was found in Falster, Denmark, gives no evidence that a leather bag was buried with the fragment. Meanwhile, the very similar flute found in Sweden was located next to some remains of leather. It should be noted that it is not impossible that these could be two different instruments serving a similar function, as in Danish 'skalmejen' refers to multiple mediaeval instruments that have a similar musical niche as the modern-day obo. This is according to the living history museum 'Vikingelandsbyen' in Denmark, where reconstructions of Viking instruments are frequently made (Vikingelandsbyen 2022).

The lur is prevalent in Norwegian history and is arguably the most historically significant instrument of the region. They were featured in rock art from the Bronze Age (Boyle, 2008, p. 69) and mentioned in the sagas, showing their prevalence in the Scandinavian region for several thousand years. In the Norwegian context the lur is a bit complex, as it can refer to two different significant archaeological discoveries. One of them is the bronze lur of the Younger Bronze Age, as seen in the rock art, with the best examples being the two lurs displayed at the archaeological museum in Stavanger, Norway (Sognnes, 2016, p. 9-22). They are not to be confused with the Viking lurs made from wood and mentioned in Snorre's sagas. The only example we know of is the one found in the Oseberg ship excavation of 1904, dating to around 820

BC, the lur was constructed from two halves put together to form a tube. It is the wooden lur of the Iron Age that is relevant for analysing music of the Viking Age.

As the probably most frequently mentioned in Scandinavian folklore and ancient texts, the lur has existed in different iterations since approximately 1000 BC, through to the Viking Age and even further to the Sami people in 1700s, as noted by 17th century Swedish scholar Carl von Linné (Carl von Linné 1737). In Viking context, the lur refers to a long wooden trumpet-like instrument that would have been played like a brass instrument, where you blow into a small opening with the same technique as playing a trumpet or other traditional brass. The lur would play nature tones which, in short, means it can only produce the natural frequency the instrument resonates and the notes that harmonise with this when blown through (Latham 2002). It is not certain what use or uses the lur would have had specifically.

The three most prominent theories are that it was used for herding animals, sounding the alarm in a military context, and simply for music. Any and all of these theories could be plausible, as there is nothing that suggests a herding instrument could not also be used for entertainment or calling your troops. There are a few pieces of evidence that might give us some clues as for exactly what the Viking lurs were used for. Firstly, the mentions of the lur in literature gives context to the instrument's purpose. In Snorre's sagas of Olav Tryggvason and Olav the Holy, to name a few, have instances of 'sounding the lur' to gather their men to 'ting' or meet, gather ships, go to land, go to war or other important congregations. In fact, it is a common enough occurrence that "to blow" as a verb is mentioned 38 times in the Snorre sagas, all exclusively meaning 'to call' together their men or ships etc. (Snorre Sturlason, *Haakon the Good's saga*, *Olaf Tryggvason's saga*, *Olav the Holy's saga*, *Harald Harada's saga*, *Magnus Barefoot's saga*, *Magnussons' saga*, *Magnus the blind's saga*, *Haraldssons' saga*, *Magnus Erlingsson's saga*)

"The king was dressed, had a song performed in his honour, and when the performance had completed, the king blew [called] to house court. His men left the ships and came to court" (Snorre Sturlason (King Olav Tryggvason saga, p. 181))

Secondly, the circumstances in which these lurs were found in 1904. The lurs found in the Oseberg burial were discovered on a ship which could indicate its

connection with travel and, in turn, military endeavours. However, there are many items found in the Oseberg burial that were not related to 'Viking activities', but rather everyday items such as needles and wooden ladles (UNIMUS 2021). Thirdly, although much earlier, many of the rock art carvings from the Bronze Age feature lur players on boats which could suggest the use of said instrument in a Viking context. If the carvings confirm that lurs and seafaring were symbolically connected in the Bronze Age, then it is not a stretch to speculate that it might be the case in the Viking Age too, where sea travels were central and lurs have been located alongside ships. On an interesting sidenote, for a long time, it was assumed that the bronze lurs were of Viking origin, although now thoroughly debunked.

Thirdly, it is also quite likely that lurs would have been connected with the traditional Norwegian method of 'stølsdrift', meaning something akin to 'summer mountain farming'. It makes sense in this context as it would be an invaluable tool for communicating between people and animals in the Norwegian mountainsides. It supposedly also had the benefit of scaring away predators such as wolves and bears. A clever analogy for this explanation would be a Viking telephone, enabling communication between different 'setre' (mountain farms), due to its dynamic and far-reaching sound. Evidence for this is primarily through traditions that survived in the Norwegian countryside in the centuries following the Viking Age.

In addition to the wind section, we have Younger Iron Age strings (Panum 1970,). A very iconic string instrument of the era was the lyre. The lyre operates as a harp, with an oblong wooden frame with strings running parallel to its longest sides. The lyre was tuned with tuning pegs, similar to, for instance, a modern-day guitar. It is an instrument that was widespread throughout all of Europe in different forms, from ancient Greece to Anglo-Saxon England. For reference, the Greek god Apollo is frequently depicted with a lyre, and a lyre was found in the Sutton Hoo mound in Suffolk, UK (Boening 1996, 290-320).

The old Norse god, Bragi, is the skaldic god of poetry and is typically depicted with a lyre. The instrument is described in the sagas as a 'gentleman's instrument':

"One is called Bragi: he is renowned for wisdom, and most of all for fluency of speech and skill with words. He knows most of skaldship, and after him skaldship is called bragr, and from his name that one is called bragr-man or -

*woman, who possesses eloquence surpassing others, of women or of men.” –
Snorre*

This quotation from Snorre highlights Bragi's behaviour as an entertainer, suggesting the connotations for the lyre's primary function as a musical instrument in the modern sense of the term.

The lyre also came in the form of a bowed instrument, called 'tagelharpa', meaning roughly 'tail-hair-harp'. These harps were widespread in Northern Europe in the Iron Age and were played with a bow of tensioned horsehair, strumming it over the strings of the harp, similar to, for instance, how a fiddle or cello is played today. The strings were viewed as instruments associated with wealth, evident in for instance its mention in the Younger Edda. Here Snorre discusses the pseudo-historical King Huggleik and his stingy nature and lavish lifestyle:

"(...) He was rather rich and fond of money; in his court he had a menagerie of entertainers, harp- and fiddle players (...)" (Snorre Sturlason, p. 28)

A final member of the string section I wish to mention is an odd one. The rebec discovered in Hedby, Denmark, is dated to the 10th century (*Lawson 1984: 151–159; Westphal 2006: 83–84*). The rebec is a three stringed bow instrument and is the only one of its kind found in Northern Europe from this time period. What makes this instrument interesting is that its origin is assumed to be from the Byzantine empire (Farmer 1988, p. 137), specifically from Miklagard, the name given by the Norsemen to Constantinople, modern day Istanbul. At the very least, this artefact could have been relocated to Denmark by continental importation. Interesting as this instrument is, it is the most obscure when discussing Viking Age music. By this, I mean that we can learn about the Vikings travels and trade routes, but not what would be 'typical' music for the region in the Younger Iron Age.

The percussion category is an interesting one, as there is no archaeological evidence of drums, most likely due to their organic material. Drums in this context refers to leather stretched tightly over a wood or bone frame. However, drums are so common all over the Western world at this stage, that it would be highly improbable that the Vikings did not have this musical technology, as it is perhaps the most primitive. Furthermore, neighbouring groups of people had drums at this time, like the

Vikings neighbours to the West, the Celts/Irish had both ceramic drums and the small handheld Gaelic-associated drum called the malemort drums, named after the location where this type of drum was first found (Clodore-Tissot; Moser, 2005, p 60-71).

Furthermore, the Norsemen's Northern neighbours, the Sami people, had 'runebomme', or 'rune drum' which is a drum strum with reindeer leather over either a frame or a bowl. The drum was first mentioned in written sources in the 'Historica Norvegiæ', a short Latin chronicle regarding Norwegian geography and history, written by an unknown author (Ekrem; Mortensen, 2003). This word for drum, bumma, is, as a matter of fact, an old Norse word (Fritzner, 1867). Despite the name, it should be mentioned that the iconography depicted on all known Sami drums do not contain Norse runes, but Sami imagery and figures.

The mouthharp, otherwise known as a jaw harp, is a frequently found instrument in Norwegian archaeology with a plethora of examples on UNIMUS (see Fig. 5). The mouthharp is played by placing it over the player's mouth to shape the sound, with the mouth cavity working as a resonator. The mouthharp can only play the one note it is set to resonate with, exactly like a tuning fork. However, the player can shape the sound with their mouth to alter the pitch of the overtones, allowing the instrument to play melodies. Due to

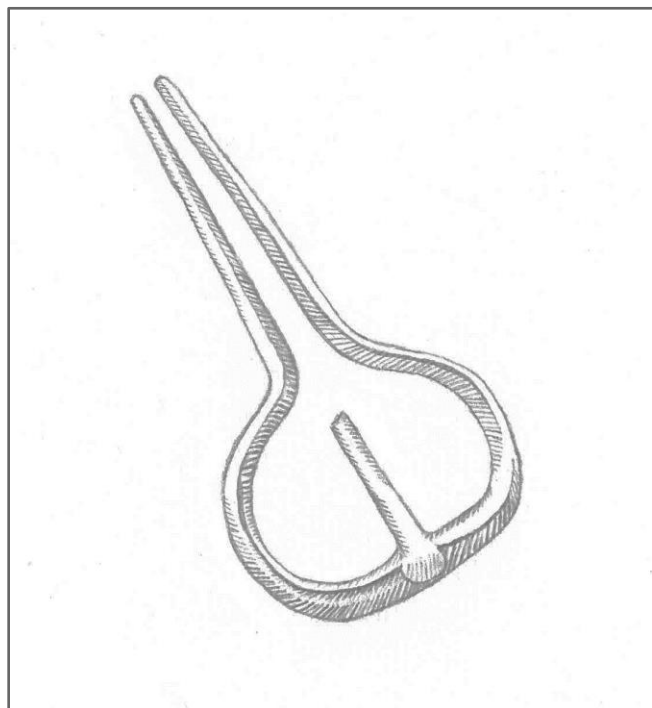


Fig.5. Illustration of a Viking Age iron mouthharp. (By Olivia T. Peters).

the instruments' natural limitations, the mouthharp can only play nature tones. The mouth harp has been around in the Scandinavian context for a long time and is still an instrument that is played today both in traditional and contemporary music (Kolltveit 1996).

The mouthharp could have served as both a melodic instrument, a harmonic instrument, or a rhythm instrument. Melodic; as it can play simple melodies, harmonic;

as it can harmonise and ‘support’ other musical instruments, and rhythmic as it can be played in a steadfast and rhythmic manner. The latter is the most common use of the instrument in traditional Norwegian folk music, perhaps suggesting this is the way it was typically played by the Vikings too, specifically for entertainment. The rhythmic way of playing this instrument is also the easiest and requires the least musicality. Perhaps the mouthharp player was the equivalent of the triangle player in the modern-day school band.

The rattles from the Viking Age are the types seen in O. Rygh’s ‘*Norske Oldsager*’ no. 460-464. More than 250 rattles have been found in Norway. The rattles were noise-creating devices that were most commonly found in burials, frequently alongside sleighs (Gjerpe & Hansen, 2011, p. 43) and so likely functioned as a warning sound attached to horses and sleighs (see Fig. 6). However, the rattles found at the Oseberg site were in close proximity to carved animal heads, which had symbolic value. This is not uncommon and may perhaps indicate some sort of ritual or ceremonial significance. It is also worth mentioning that these rattles vary in shape and size. It is not unlikely that different types of rattles served different purposes, as some rattles, or so-called miniature rattles, seem to have been hand-held variants (see Fig. 7).

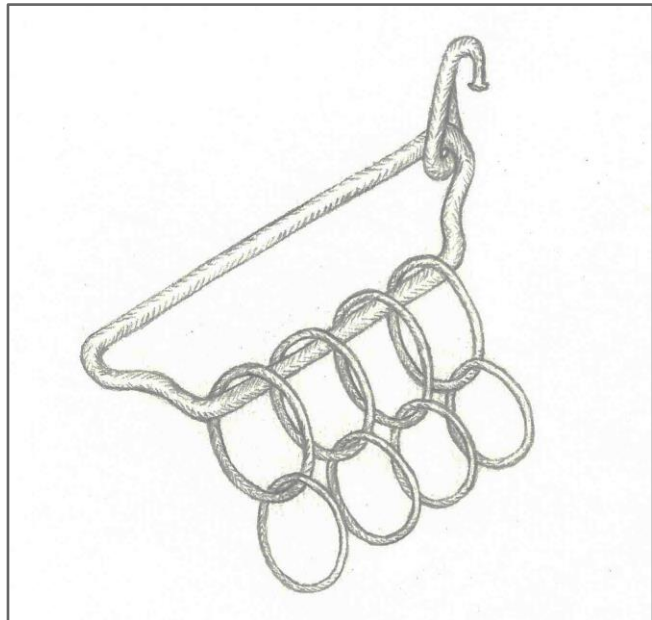


Fig.6. Illustration of a Viking iron rattle. (By Olivia T. Peters).

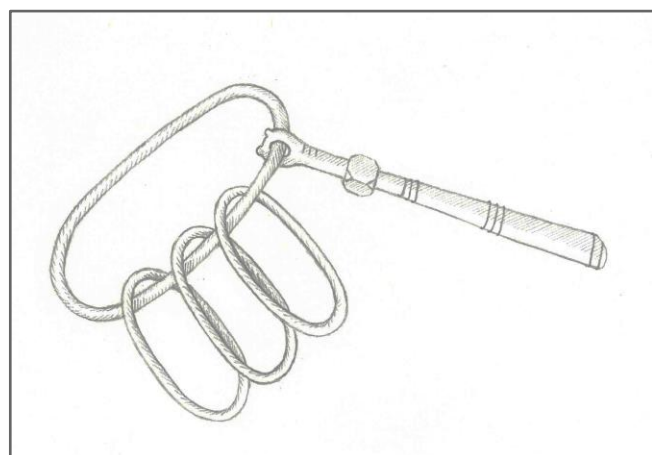


Fig.7. Illustration of a miniature/handheld iron rattle, based on C240. (By Olivia T. Peters).

The research history of the rattles is expansive, and many rattles have been documented and catalogued. The connection between the rattles and horses and

sleighs was first made by Jan Pettersen (Pettersen, 1917). Most of the research involving rattles is often on either the 'bigger picture'/context or the analysis of the devices in relation to their context. The rattles have also often been interpreted to have religious significance (Grieg, 1928; Grøtberg, 2007; Melsom, 2003; Solberg, 2003).

A final sound-producing device, somewhat related to the rattles are the bells (see Fig. 8). Many bells have been found in archaeological settings. Interestingly, several bells had been found in the same context as some rattles. This might indicate its primary use and function (see Chapter V.2). The bell as an instrument is one that has been around in human history for at least 5000 years, with clay bells found in China dating to the 3rd millennia BC

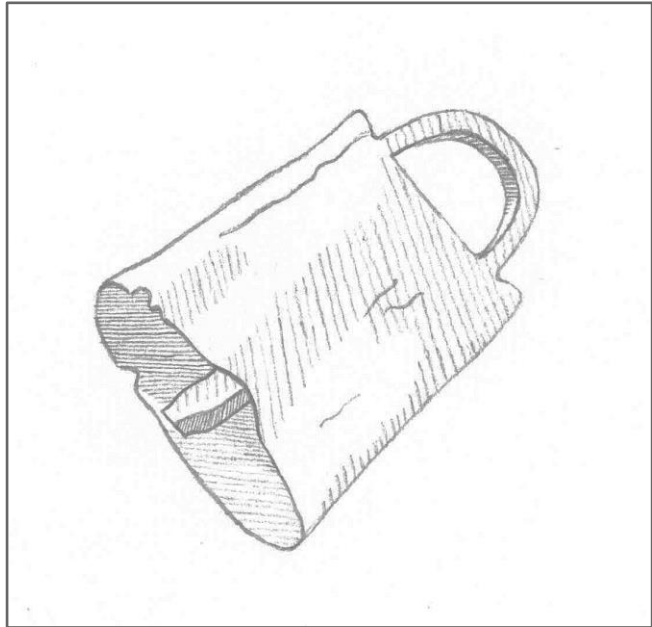


Fig.8. Illustration of a Viking iron bell. (By Olivia T. Peters)

(Huang, 2002, pp. 20-27). To highlight the influence of the bell, the jingle bell was also one of the first musical instruments to be played in space, together with a harmonica, playing the Christmas song 'Jingle Bells' for Christmas 1965 according to Guinness World Records (GWR, 2017).

Of course, music and sounds are not exclusive to instruments. The human body can produce the most primal versions of music and sounds such as clapping, singing, whistling, and stomping, to name a few. The above-mentioned examples are attributes that can be seen in cultures all over the world and vary in significance to different peoples. It is safe to assume that these sound-producing methods were utilised by the Scandinavian people in the Younger Iron Age. In fact, we know that singing etc. was performed by the Vikings due to external documentation from outside Scandinavia, such as the Maurish scholar Al-Tartushi or Adam of Bremen, both of which will be discussed in Chapter III.2. For obvious reasons, our only evidence is derived from literary and iconographic sources, so our knowledge on the Younger Iron Age Scandinavians' tonality, musicality and preference is next to none.

The scarce yet diverse cast of instruments suggests a broad musical culture whereby these early Scandinavian people created music in whichever manner they could. Music via instruments, as with most cultures, was more than likely an essential part of their society, this is very clear from the substantial archaeological record. Therefore, it is not farfetched to suggest that these peoples took great inspiration and influence from their neighbouring people, especially as we concretely know how extensive the Vikings travelled. This is supported by the archaeological evidence of foreign instruments in the Viking context and vice versa.

III.2 – Literary Sources

Literary sources are also relevant for this research. Although literary sources can only give us an insight into ancient music, they can detail thoughts, feelings and descriptions, thus allowing for the requisite ethnomusicological approach. It should be mentioned that the literary sources on this are not at all direct sources focusing on either the instruments or any musical aspects directly. There is no ancient compendium of music, but rather scattered mentions from various people from different places discussing it at different times.

The most obvious literary source when it comes to studies on Younger Iron Age Scandinavia is indisputably Snorre Sturlason's sagas (Sturlason, approx. 1200). They have several mentions of both music, sounds and instruments. However, the problem with these sagas, first of all, is that they are written several hundred years after most of the events described in the text. This makes Snorre's texts comparable in historical accuracy to, for example, Herodotus' retellings of events in the ancient Mediterranean. Some of the depicted events can suffer from human error through oral accounts, and because the stories were told through the lens of a 13th century man, who might have introduced some of his own biases. In addition, the Sagas were written in a poetic nature, embracing the supernatural and mythical. This leaves the sagas in the same position as, for example, Homer's epics, that they might be grounded by real events, but the addition of fantastical elements makes separating myth from reality difficult.

Despite these flaws, the sagas remain the best and most cohesive written sources on Younger Iron Age Scandinavia, as well as the most contemporary.

Therefore, it is impossible to discard this source when discussing the Vikings, especially when it frequently supports other archaeological material (Byock & Zori, 2013). Furthermore, Snorre's texts can be cross-referenced with other tellings of the same stories. For example, the cross referencing of the Younger Edda (Prose Edda) has shown that Snorre's retellings were cohesive with older writings of the myths, Older Edda (Poetic Edda), which in turn adds credibility to all of Snorre's work (Lieberman 2016; Wanner 2008, p. 97). Nevertheless, whether Snorre wrote about mythological or real events is not relevant when examining his music-related mentions. Regardless of the origin of the stories, the references to music are still representative of the musical ideals of the era.

There are also references to Viking music from outside sources. The most relevant and most frequently referenced is probably the Andalusian scholar Al-Tartushi, who stated:

"Never did I hear singing fouler than that of these people (Schleswig), it is a rumbling emanating from their throats, similar to that of a dog but even more bestial" (Translated by Jones, 2001, p. 177)

This paragraph is interesting in many ways, one of which is that Al-Tartushi compares the music to animal sounds and did not view the Norsemen in a favourable way. It is also interesting how the view of Vikings being 'bestly savages' is something that is echoed in modern popular culture as well.

Another foreign account is Muslim chronicler and traveller Ahmad Ibn Faḍlān from the 900s, who describes a Viking funeral of a high standing individual, with an example of human sacrifice, where music in various forms is integral to the ritual, including musical instruments and singing.

"...they consume [intoxicating drink] in the course of ten days, uniting sexually with women and playing musical instruments. After that, the group of men who have cohabited with the slave girl make of their hands a sort of paved way whereby the firk mounts onto the ship. She was given a cup of [intoxicating drink]; she sang as taking it and drank. The interpreter told me that she is in this fashion bade farewell to all her girl companions. Then she was Given another cup; she took it and sang for a long time while the old woman incited her to

drink up and go into the pavilion where her master lay” (Translated by Montgomery, 2017)

It is interesting to note that this is a more objective description of an event that does not seem to put much emphasis on the song in one way or another. It must also be mentioned that there is some discussion whether or not this is indeed a description of Vikings or another North European group at the time, as the exact details of its geography are vague (Ohlmarks 1994, p. 171).

The German missionary and chronicler Adam of Bremen who lived and worked in the latter half of the 1000s wrote about his encounter with the Vikings in the temple at Uppsala during a blot, a Norse type of ceremony, which he describes in his historical treatise '*Gesta Hammaburgensis ecclesiae pontificum*'. In his texts he describes their singing as 'so bad, that he would rather not describe it' (Adam of Bremen, p. 208).

A final example of a literal source are the actual notes of the oldest known Norse song called '*Drømte mig en drøm i natt*' meaning '*I dreamt a dream last night*'. This song was transcribed in approximately 1300, after the christening of Denmark. However, the song's Danish lyrics were written in runes, which has older origins than Christian Denmark, where it was transcribed. The song and lyrics were written on the final page in a Danish law book called '*Codex Runicus*' (*Codex Runicus/AM 28 8vo ca 1300*, p. 201). The content of the book, all written in runes, includes Danish law, church matters, tellings of early Danish kings and this song. However, the song might have older origins as it is also written in an ancient alphabet and was considered important enough to be included in a book of laws. The song's apparent importance suggests that it probably has oral traditions going further back than the text. This song is often considered to be the oldest known Scandinavian song (Lie, 2009) (see chapter V.4).

Chapter IV - Research History

Due to the lack of music archaeological research on Scandinavian sounds we must borrow research, results, analogies, and examples from other fields, such as classical or mediaeval music archaeology, in order to establish the universal or common tendencies within this subject. This includes the impact of social change, historical events and foreign exchange on musical behaviours and preferences.

IV.1 What We Know About Dead Music

Dead music has been researched for at least as long as music archaeology has existed. If there is one thing that has come to light through this research, it is that social factors change music. We can see the same thing in modern history: how large events or social shifts change music. For instance, the themes and motifs within music during and after World War II, where conservative romantic ideals were central. Typically, musical hits from the 1940s sang about reuniting with loved ones, establishing a family or the longing for home. This contrasts with the shift towards more liberal and easy-going themes of freedom and independence through the emergence of rock music, or other 'rebellious' music within 'youth culture' in the 1950s and 60s, such as teddy boys/greasers.

Similar to these examples, historical events in antiquity shaped their music. For instance, social and political reforms in the Roman Empire such as Constantine the Great 'converting' the Empire to Christianity in 312 AD. This in turn changed the musical themes of the era, focusing on the biblical divine and holy (Brown, 1995). With this established consensus as a backdrop, we can safely assume similar large events in Scandinavian history would have shaped their musical culture. For instance, a Christian reform occurred in Scandinavia too, it is rather likely that this would mean that music prior to the Christening of Norway in 1030 would be different from the music post 1030.

Another established fact in music archaeological circles is that all music builds on what came before it, the same way no ideas are truly original. For instance, Roman music borrowed heavily from musical cultures of the regions they conquered. A lot of

music with a Greek, Egyptian or Persian origin can be found in Roman musical culture (Scott 1957, p. 404). This can also be seen elsewhere in Roman society such as in the theatre, military or during religious ceremonies, not to mention their mythological pantheon at large being an adaptation of Greek mythology (Georgia Regents University, 2001). Therefore, it is not a stretch to think that Vikings would have brought home music from their conquests, a factor also supported by archaeological evidence, such as the rebec mentioned in Chapter III.1.3.

All the above examples serve as analogies for elements that would likely have played part in shaping Younger Iron Age music in Scandinavia. We can assume that large changes, be it social or historical, factored into the development of sounds and music during this time, as well as the influence from other neighbouring peoples.

IV.1.1 – Sensory Research

As previously mentioned in chapter II.4, a relevant aspect into the research of music, in particular, is the sensory experience of sounds.

Our senses are the mediums through which we as humans experience our world. Whilst artists and poets have indulged themselves in senses in their work, the sensory experience has not been considered a legitimate subject in the archaeological academic circles until recently (Day, 2013, p. 2). Journals dedicated to the topic, such as *'The Senses and Society'*, is a testament to this interdisciplinary study of humanity's bodily experience; touching, tasting, hearing, smelling, and seeing. A wave of sensory studies has integrated into various disciplines in the humanities over the last few decades such as sociology, history, anthropology, ethnography, food studies, art and film, and of course archaeology.

At the 27th *'Annual Visiting Scholars Conference'* at the Centre for Archaeological Investigations at Southern Illinois University in March 2010, 'human senses in archaeology' was the theme. The papers presented at said conference demonstrated the multiplicity of methods of engaging with sensory studies (Day, 2013, p. 2). *'Making Senses of the Past: Toward a Sensory Archaeology'*, was then published by Southern Illinois University and edited by Jo Day as a collection of papers on the

topic, which included many of the papers that were presented at the abovementioned conference. However, several publications concerning sensory archaeology had been published before this conference too. For instance, *Archaeoacoustics* by Scarre and Lawson or *Colouring the past* co-written and edited by Jones and MacGregor (Lawson and Scarre 2006) (European Archaeological Association. Conference 2002).

I will use these previous scientific publications on senses, as guidelines for my own understanding of sensory archaeology within the research of Younger Iron Age Scandinavian music.

IV.1.2 – Music Archaeological Research

Research on music archaeology is a growing topic. Specifically, music and sounds in both mediaeval and classical studies has had focus since the foundation of the discipline. Since the subject of Viking musicology is such a young one, we can borrow elements, theories and frameworks from other research on other historical music.

For instance, Joe Williams is exploring the topics of silence and music in a religious setting in mediaeval Canterbury, the epicentre of Christianity in the UK in his PhD dissertation; *'Musical Space and Quiet Space in Medieval Monastic Canterbury'* (Williams 2013, p. 196-221). Williams explores not only the importance and meaning of sound, but also of its absence, and the human experiences surrounding this.

Experimental and classical archaeologist Dr. Patricia Baker has published several works on the sensory human experiences of Roman gardens, from smells to sights and sounds. She emphasises sustainability in most of her recent work within sensory archaeology. For instance, how Greco-Roman knowledge of horticulture and botany can help make the florist industry today more sustainable, using local plants and organic material, or how Roman gardens in Pompeii affected mental health (Baker 2018, p. 404-417).

Eleanor Betts has also written a book on sensory archaeology in ancient Rome. In her book, *Senses of the Empire: Multisensory Approach to Roman Culture*, she discusses both sounds and silence in Rome. She also discusses the soundscapes of the streets and sound-producing devices' role in it (Betts, 2017, p. 150). Betts builds

her musical arguments based on the pioneering musical research on Roman musical culture written by late classical archaeologist Nicholas Horsfall. In his work, *The Culture of the Roman Plebs*, he discusses the music's role as entertainment, for dance and for theatre (Horsfall p. 33, 138).

The book *The Sensual Culture Reader*, Steven Feld writes about the human cognitive abilities in relation to the human experience. In Feld's article, *Places Sensed, Senses Placed: Towards a Sensuous Epistemology of Environments*, it becomes apparent how important the human experience is when studying humans. (Felds, 2005, p. 179-191). The aforementioned fact that humans of the past have the same cognitive abilities, cravings and desires as us and are virtually the same as modern humans means that we will experience the sensory experiences as humans of the past did. The only factor that changes this experience is the social implications and personal associations with what is being sensed. The number of scholars putting emphasis on the human experience when doing research on just humans, is an ever growing one. As evident by the large amount of literature that has emerged on the topic over the last few decades such as Constance Classen and David Howes' *Ways of Sensing: Understanding the Senses in Society*, we now have a brilliant introductory overview of the overarching topics of phenomenology and the sensory experience in archaeology (Classen and Howes 2014).

Music archaeology, like most other disciplines in archaeology, is often faced with the questions of why it matters, or how it is relevant. In other words: 'so what, who cares?' Whilst different scientists will have different approaches to this with differing answers, the book *Music as Medicine: The History of Music Therapy since Antiquity* directly ties music's medicinal and psychological qualities from ancient times into the use of music in modern therapy. The most archaeologically relevant chapter in this book is chapter two, *Music Therapy in Antiquity*, written by Martin West. West discusses the primal aspects of music and its connection to medicine in the classical world (West, 2000, p. 51-68).

Music archaeological research in classical context cannot be discussed without mentioning MOISA, The International Society for the Study of Greek and Roman Music and its Cultural Heritage. MOISA states on their website: "*an interdisciplinary association that promotes the conservation, interpretation and enhancement of the*

musical heritage of the Greeks and Romans, and its cultural heritage from the Middle Ages to Contemporary age.” The society consists of antiquists, musicologists and ethnomusicologists, philosophers, anthropologists, science historians, archaeologists, art historians, and other scholars (Barker and Rocconi 2021). This group of researchers publish a bi-annual journal and an open-source bibliography. The society is a useful source for music archaeological research and learning.

Norwegian music archaeologist Gjermund Kolltveit has contributed to the discipline in various ways, one of which in his paper *‘The Prehistory of Music: Human Evolution, Archaeology, and the Origins of Musicality’* where Kolltveit gives an overview of the history of music, acoustics, sound and sound-producing devices (2014, p. 218-220). Kolltveit has also written the introductory chapter and co-edited a book on the topic of archaeology and acoustics together with Riitta Rainio (Kolltveit 2020, p. 21).

In the publication *‘First record of the sound produced by the oldest Upper Palaeolithic seashell horn’*, some of the earliest evidence for musical cultures is discussed, stating that:

“Anthropologists and ethnomusicologists assert that there is no society without song, and more specifically, there is no ritual or celebration without accompanying sound” (Fritz et al. 2021)

This point can be inserted into any musical culture and can indeed be applied to Vikings as well. Not to mention this quote's relevance to the rituals of the Vikings.

IV.2 - Current Research into Viking Age Music and Sound

Whilst music archaeological research has been around for approximately 50 years, the larger focus in Scandinavian archaeology has not had the musical focus seen in many other European cultures. Historians have studied the poetry of the Vikings, and the material culture and technology has been researched extensively for over a hundred years. However, the musical angle on the Vikings would benefit massively from more research. This being said, it's not a blank field, there are fortunately a handful of very acclaimed archaeologists dedicating their career to the topic of music

archaeology in a Scandinavian context, such as the Swedish music historian and archaeologist Dr. Cajsa Lund.

Perhaps one of the most profiled music archaeologists on Viking archaeology, Gjermund Kolltveit, has done extensive research on various musical instruments of the era. He discusses the conceptualisation of folk music in the 18th century, and how this music was based on the oral traditions that have deeper roots than the term invented to categorise it (Kolltveit 2008, p. 60-80). Kolltveit has also researched the musical culture of the Viking and mediaeval period, discussing how problematic the history of categorising these instruments and sound-producing devices has been. For instance, in his article '*Spor etter middelalderens musikkliv: To strengestoler fra Gamlebyen, Oslo*', he discusses how instruments can serve multiple functions and can be viewed and analysed in very different ways (Kolltveit, 1997 p. 69-83). This is an interesting factor when attempting to put the sounds into context, as sounds are different and have different meanings in different settings.

Nils Grinde in his encyclopaedic work, '*Norsk Musikkhistorie: hovedlinjer i norsk musikkliv gjennom 1000 år*', discusses Viking music in relation to the rest of Norwegian musical history. Although, Grinde's work is not specific to Vikings, but a look at the 'bigger picture'.

Finnish musicologist, Otto Emanuel Andersson, had an academic career dedicated to Finnish-Swedish folk music and folklore. He has written many publications through the 20th century that form a cornerstone in Swedish music historical research. For instance, he has written several music-related entries in the Swedish dictionary, and is the founder of three music magazines, and formed the Brage Society dedicated to Finnish-Swedish music and culture (Americana Corp. 1962, p. 127; Pettan and Titon 2019, p.211, 224-227).

Finally, the published master's thesis of Chihiro Tsukamoto named '*What did they sound like? Reconstructing the Music of the Viking Age*' discusses how there has been plenty of research on the Vikings and the Viking Age, but the musical aspects are lacking. Tsukamoto also proceeds to use cross-cultural comparisons between other mediaeval musical theory in an attempt to discover behaviours that might have occurred in the Viking musical culture. Tsukamoto also attempts to gain some knowledge on Viking music from folk music and argues that its conservative nature

makes it worth analysing as it would have remained mostly unchanged (Tsukamoto 2017).

IV.2.1 – Viking Instruments

The instruments of the Viking Age have been discussed in individual details in the past, primarily in the various reports from the excavations they came from or from larger papers discussing remarkable sites in greater detail, such as the numerous papers written about the Oseberg Viking ship. For example, '*Osebergdronningens grav: vår arkeologiske nasjonalskatt i nytt lys*' or '*Jernalderen i Norge: ca. 500 f. Kr.-1030 e. Kr*' where both the rattles and lur are put into context and speculated around' (Solberg 2000; Myhre, Christensen, and Ingstad 1992).

Also written are a few papers and theses focusing on specific instruments as archaeological material, such as '*Rangler i Vikingtidsgraver fra Vestfold*' by Charlotte Melsom. In this thesis, Melsom takes a deep dive into the archaeological material that is the Viking rattles, geographically restricted to the region of Vestfold which is rich in rattles. She ties the rattles directly to the craftsmanship due to the other craftsman tools sometimes found in graves with rattles (Melsom 2003).

The aforementioned Swedish Musicologist Otto E. Andersson has also written compendiums on Nordic instruments, which is a handy tool to grasp an overview of instruments with links to the Nordic regions (Andersson 1934). Finally, the Norwegian musicologist Sverre Jensen has completed plentiful research and numerous publications on mediaeval instruments (Jensen 2021) which overlap with Viking instruments.

IV.2.2 – Reconstructions

A great number of scholars, historians and other music history enthusiasts have attempted to recreate the musical instruments of the past. One huge name in the community of re-constructed music is the group called 'Wardruna' who plays

reconstructed Mediaeval and Iron Age instruments in their music, inspired by Nordic history, myth and runes (Wardruna).

There also exists a plethora of websites dedicated to the replicas of Viking instruments and the artistic community is a large one. Some reconstructions are made by academics for scientific purposes while others are simply made by enthusiasts for their own pleasure, curiosity, or amusement, for instance '*Projekt Forløg: Reenactment and science*', is a very well researched passion project with detailed illustrations for recreations of various mediaeval items including a musical instrument (VLASATÝ 2022). The line between these two categories of academic and eccentric are blurry and not mutually exclusive. Such as Dr. Jackson Crawford who makes reconstructions of both instruments and music of the time. Crawford made and performed his own version of '*drømte mig en drøm i nat*' with self-written extended lyrics for his own amusement, stated in a Youtube video he posted in 2017 (Crawford 2017).

From archaeological research on Viking instruments to musical reconstructions, it is clear that there have been multiple studies focused on various aspects within this discipline. There is a distinctly strong interest for the music and sounds of past people, and especially in recent years for Viking music. Although this is promising and this work can contribute to my thesis, research into Viking music archaeology is still relatively limited.

Chapter V: Main Discussion

In order to learn about the music traditions of Younger Iron Age Scandinavia I shall analyse the various sound-producing devices found in the burial sites from this time period across Southern Norway. To do this, I have collected together, as previously mentioned, a dataset which presents this data effectively and allows me to draw conclusions based on distribution, quantity, and quality. The relevance and impact of this will be discussed as I look in depth at individual artefacts and their functions.

I will also look directly into Viking musical traditions, literary evidence and reconstructions in order to create an overall image of the Viking culture using ethnomusicological and experimental methods. This will in turn help me understand and reflect on the 'value' which music archaeology has on both the current academic discussion as well as modern artistry.

V.1 – The Dataset

The dataset I have created is designed to give insight into the specific archaeological material that contains musical instruments and sound-producing devices in the form of grave goods. As the data is collected from a larger geographical area and features different types of instruments, a dataset that allows for analysing tendencies and trends is an obvious solution to examine such a large and diverse dataset.

V.1.1 - Dataset Explained

The dataset was created to help analyse the distribution of instruments found at or attributed to burial sites in Southern Norway, to add geographical and statistical context to the discussion. The term 'Southern Norway' is ambiguous, as it can refer to two different ways to divide Norway into regions. In Norwegian, 'Sør-Norge' and 'Sørlandet' are two different geographical terminologies referring to different areas. 'Sør-Norge' refers to the Southern half of Norway, whilst 'Sørlandet' means the Southmost municipalities in Norway between Telemark and Rogaland. When I discuss Southern Norway, I am referring to 'Sør-Norge', the Southern 'half' of the country from

Trøndelag and Southwards (see Fig. 19). This is the extent of my dataset as the Vikings were more prominent in the Southern regions than in the Northern throughout a longer period of time. The Northern Norwegian culture at the time would not be as representative for the Scandinavian Iron Age, as it would consist of different ethnic groups, like the native Sami people. Fortunately, the vast majority of the instruments from the desired time period have been excavated in Southern Norway.

In order to make an overview of the instruments and where they were found, I created the dataset by downloading the data available on public Norwegian databases. These include: Unimus, HUMGIS, Kulturminnesøk and Askeladden, which are official websites designed with the goal of preserving cultural heritage and giving the public access to archaeological records. Each of these resources have varying functions yet all aid in analysing archaeological material.

Askeladden is the database system of the Norwegian Directorate for Cultural Heritage (Riksantikvaren), which is a governmental office responsible for the management of cultural heritage, cultural environments, and cultural landscape of historic importance (Riksantikvaren 2020). Askeladden's database is not publicly available by default but can be granted access to for research purposes. HUMGIS is the map service developed by the University of Oslo/Museum of Cultural History in Oslo using the mapping software GIS (KHM 2018). HUMGIS functions like an interactive map where the user can put on filters to find a specific type of cultural site or otherwise and can form queries based on these filters to create unique datasets of sites. Unimus is a joint effort database where all archived archaeological finds from all museums can be found in one place (UNIMUS 2021). It was Unimus I primarily used to construct my dataset. I did individual searches for each instrument type, with various spellings/languages, and downloaded the entire query as an excel spreadsheet. I repeated this process for all the instruments before combining all the sheets together. This resulted in a list of more than 300 unique entries. I proceeded to look up each individual entry one at the time to verify its relevance.

The verification process was simply to search each entry individually in the Unimus database to look up its dating, as the filter on the website is very basic and can only filter as broadly as to 'Archaeological'. I retained all the entries that would have been dated to either 'Viking Age', 'Younger Iron Age' or 'Mediaeval Age' in my

dataset. However, I validated the dates of the mediaeval entries to make sure they fell within the Younger Iron Age period. For as much information as possible, I researched external reports for each instrument where possible, as well as studying each entry's context and find-circumstances. All items that were not an instrument or did not fall into the relevant time period were removed from the dataset. There were a few items that were not sufficiently dated and so were left out, unless there was sufficient evidence to deduce that they were of early mediaeval origins. An example of data left out is N9342, an artefact deemed to be a mouthpiece to something like a flute or a bagpipe. However, the item was only vaguely dated with the tags 'Mediaeval' and 'Newer History'. The piece is also documented to be made of ivory, which leads me to believe it was much more recent than what is relevant for this dataset. By the time all the entries were verified, the dataset was down to 220 entries.

One problem with Unimus is that all the entries have been archived by different people. This means that it can be somewhat inconsistent. For instance, the category 'Type' and 'Form' often have an overlap and are interpreted differently (in the dataset: Type = Gjenstand, Form = Form). For example, one entry of a flute was entered as 'Musical instrument' in the 'Type' category and 'Fragment' in the 'Form' category, while a different flute could have 'Flute' as its Type, and 'Flute' in its Form as well. As a part of the verification process, I also made sure the entries in the dataset were consistent. As a rule, I would make 'Type' refer to what instrument it is or used to be, and 'Form' what shape or condition it was in, such as fragmented or not. Yet another somewhat related problem is that the original reports are not only written by different people, but also by different institutions and in different time periods. This is challenging, academically speaking, due to the starkly varying approaches, methods, views, and even quality. It is also clear that some artefact entries are extremely lacklustre when it comes to documenting how, where and when they were found. For instance, some of the entries from the 1800s were not only grammatically and linguistically demanding, but even lacked the description of where the artefacts were found. An example of this is the rattle, C228, found in brilliant condition. In this case, there is no registered County or Municipality. In the instances where this is the case, I have chosen to include them in my dataset as they are registered at museums whose archaeological jurisdictions are within the regions in question. Furthermore, the fact that there are no rattles found outside of Southern Norway, according to the data from UNIMUS, gives

me confidence enough to include this instrument type in the dataset. However, they will not be contributing to the distribution statistics as they will be in their own 'Unknown County' category.

In addition to these above-mentioned flaws in the data that must be acknowledged, another major factor to consider is my own human error. From going through hundreds of artefacts as precisely and carefully as possible, there is still a probability for errors or mistakes to appear in my dataset. The errors, if any, would, in any case, be very minor, and so therefore are unlikely to heavily affect or be detrimental to the outcome. It is also worth noting that if there are incompletions in any of the publicly available records, they have not been included due to the lack of relevant contributory information. Secondly, the dataset was put together in the spring of 2022 and therefore any entries after March 2022 have also not been incorporated.

My carefully formed dataset allows for an accurate overview of finds and makes it possible to see the frequency of some instruments compared to others. It further allows for analysing the different conditions and types internally within one instrument group. For instance, I can analyse how many rattles are fully intact, how many were found fragmented, and how many rings or hooks had been found independently from the rest of the rattle. The rattle artefacts are my biggest category of finds. They also have an additional benefit in my dataset, which is that they have their own set of subcategories, called 'Variations'. This is what type of rattle it is, compared to the drawings in either Oluf Rygh's work in '*Norske Oldsager*' (Rygh 1999) or Jan Pettersen's '*Vikingtidens Redskaper*' (Pettersen 1917). Using the combination of data across all the different instruments and locations, I can create an understanding of the potential preferences as well as functions of sound-making devices in this time period.

V.1.2 – Dataset Interpreted and Discussed

There are some patterns in the dataset that are easily spotted and must be assessed. Firstly, and most obviously, all of the entries were found in burial sites which means that they had been deliberately deposited in the ground alongside a deceased person. However, it should be acknowledged that it is in archaeology's nature that a large

number of artefacts are found in burials, as they are sites that are always of archaeological interest to excavate, due to our absolute certainty that there has been human activity. Statistically it is likely that humans have disposed of, lost, or left behind items that are then naturally buried over time, however, it would be

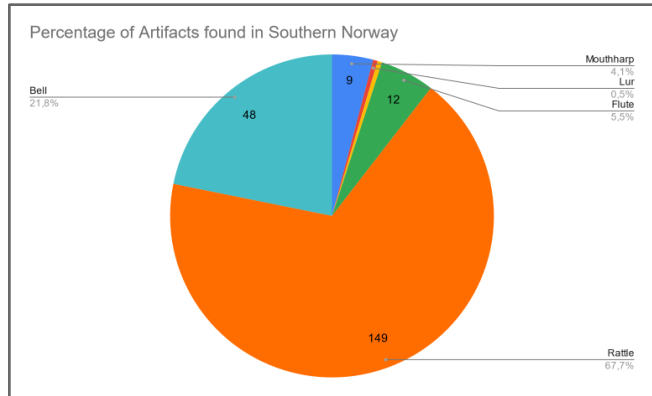


Fig.9. Percentage of musical instruments found in Southern Norway. (By Mikkel A. W. Totland)

inefficient and financially impossible to start excavating a square of a field hoping to find human activity without any context. This does not, however, diminish the importance of the burial finds. Archaeology is a field that requires a constant assessment of priorities to maximise learning and research potential.

Rattles

To reiterate, the largest category of sound-producing devices in my dataset are the rattles. This category is responsible for a vast 66.7% of the dataset (see Fig. 9) with the majority found in the Eastern counties (see Fig. 10). This may imply a few things. Firstly, the fact that this category of devices is so much larger than the other, leads me to believe that its primary function would have likely not been as a musical instrument. This is a conclusion, however, that I am not the first to reach. Jan Pettersen suggested that the rattles were used for horses and sleighs as early as 1917 (Pettersen, 1917). This was supported by the archaeological context of which several rattles had been found in proximity to horse gear.

This theory was first discussed after the discovery of the Oseberg sleighs. Among the treasures from the 830s AD found in the Oseberg burial mound were four sleighs (Gansum, 2004, p. 36). These sleighs are of exquisite craftsmanship, not to mention remarkably well preserved.

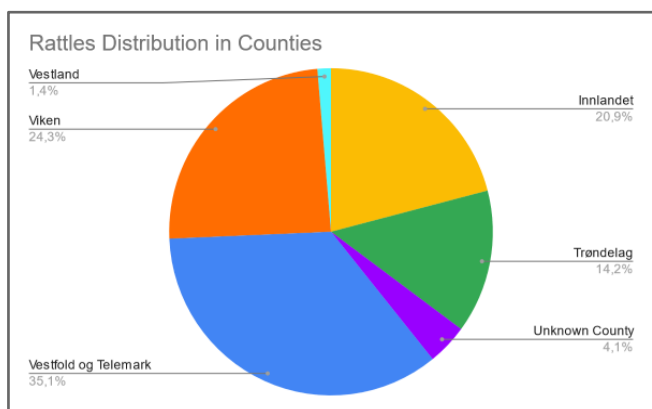


Fig.10. Distribution of rattles found in Southern Norwegian counties. (By Mikkel A. W. Totland)

According to the Cultural History Museum (KHM) in Oslo, a sleigh would have been pulled by two horses harnessed to the opposite sides of a shaft. The sleighs are rich in carvings and would have been time-consuming to craft. The sleighs were also painted atop the carvings in strong colours to enhance the carvings' prominence. The colours were clearly visible when the sleighs were excavated but can unfortunately no longer be seen due to the circumstances of the conservation process. The sleighs were undoubtedly made for pageantry, evident from these extravagant decorations. (KHM, 2016). In close proximity to the sleighs, archaeologists found multiple rattles, opening the discussion for rattles being associated with horses and sleighs.

Examples of this is evident in my dataset as well, such as T20362, which was found together with a horse bit, as well as C22720 which was found with a sleigh hook (for example, see Fig 6), horse bit and a plough, and of course the Oseberg rattles, C55000, which were found with highly decorated sleighs. What is interesting, is that my dataset for this research appears to support and match this theory from 1917. By comparing the rattles to other sound-producing devices, the larger frequency of rattles suggests a more practical use for the instrument (Fig 9). This can be argued, as if rattles were used solely as musical instruments, one or more of the other instruments would have likely been equally as common, especially as many of these other instruments were significantly less resource heavy to create.

Though it should be said, organic instruments such as bone or wood flutes are less likely to remain preserved in the Norwegian soils than the iron-based rattles (see Fig. 13), as different materials have different biodegradability. This could explain why these typically less technologically advanced instruments are so much scarcer than the sturdier metal rattles and bells, as depicted by the frequency of material

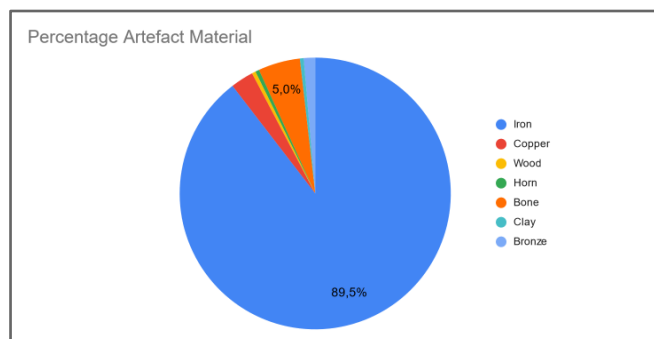


Fig. 11. Percentage of various materials that instruments consist of. (By Mikkel A. W. Totland)

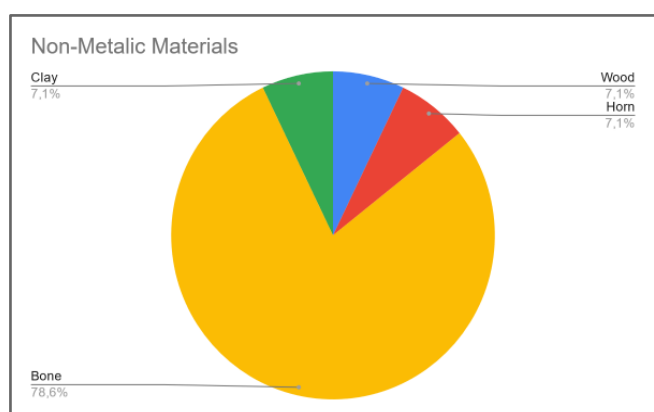


Fig. 12. Percentage of non-metallic materials that instruments consist of. (By Mikkel A. W. Totland)

in figure 11 and 12. Bone from a medium sized mammal might decay and dissolve in as short a time as twenty years if the soil is acidic, to several hundred years in pH-neutral soils or sand (Byrd & Castner, 2014, pp. 407-423) which makes the artefacts made from bone the more likely non-metallic material to ‘survive’ (Fig. 12). A large percentage of the Norwegian forest floor, about 80%, is covered in podzol, which is extremely acidic (Gjessing 1977, 48). The corrosion time of iron has historically been divided into two categories, whether the artefact was exposed to a wet or a dry environment. Metallurgists and archaeologists A. B. Johnson Jr. and B Francis points out: “Therefore, it is difficult to directly compare long-term corrosion rates of artefacts of the same basic material (e.g., iron) in different environments. However, it may be possible to detect trends.” (Johnson Jr. and Francis 1980, p. 3.1). In their dataset, they compare different iron artefacts under different conditions to look for patterns. For instance, his analysis of cannonballs found in close proximity to the ocean, and which would have been exposed to salt water, had worse corrosion than identical cannonballs covered in mud. Although it is stated in Johnson Jr. and Francis’ publication that there are not enough cases assessed in their research to justify definitive statements, his research still gives us somewhat of an idea as it estimates roughly how many inches of corrosion a metal object experiences per 1000 years. Johnson Jr. and Francis indicate how some metal artefacts, such as those exposed to the arid atmosphere in warmer regions, experience between 0.0001 – 0.001 inches. In other words, hardly any. Whereas in the UK, a pewter dish of iron found buried in the wetter and more humid climate, experienced between 0.04 - 0.3 inches of corrosion (Johnson Jr. and Francis 1980, p. 3.1), which is significantly more. The publication

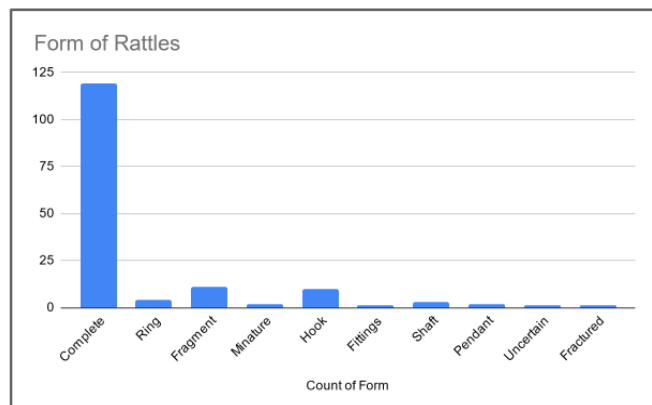


Fig.13. Conditions and various forms of rattles found in Southern Norway. (By Mikkel A. W. Totland)

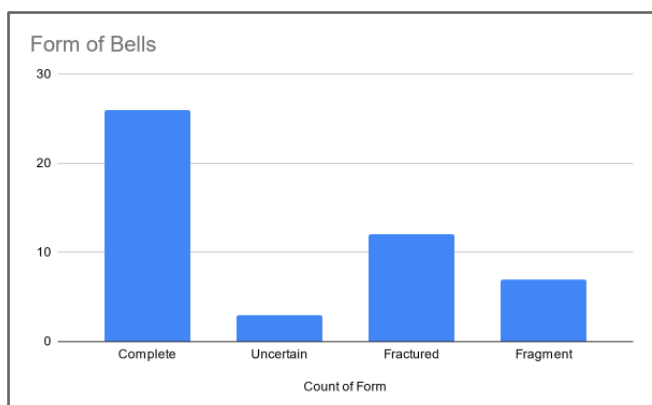


Fig.14. Conditions of bells found in Southern Norway. (By Mikkel A. W. Totland)

concludes iron, or FE, typically corrodes between 0.073 – 0.48 inches (0.185 – 1.2 cm) over the course of 1000 years.

If we use Johnson Jr. and Francis' findings as a general guideline, we can see that rattles and bells found in Norway would likely have corroded between 2 mm and 1.2 cm since the Viking Age. As the rattles and bells typically have a thickness of one centimetre at their rings, this means that many of them would survive in a relatively preserved state till modern day (see Fig. 13 and 14). With this information, we can also assume that some bells and rattles have perished or corroded to a point beyond recognition. For instance, the rattle T429 is so deteriorated one may argue it might not have been a rattle, whilst C240, is in such a preserved state it could have been made in the last century. Yet both these cases are actually from the same time period.

Another point important to consider, is that just because the primary function of a rattle would have been one thing, does not mean that it could not have secondary purposes. To analyse this, we should have an understanding of what the primary function of the rattles actually was. If we accept that the rattles' primary function was for horses and sleighs, then it must be discussed how this was used and why. The leading theory is that this function had two practical purposes, and then perhaps some ritual or superstitious purposes too. One theorised purpose for the horse rattle would have been to attach the horse to the sleigh, as a connective tool, the same way reins would operate for a modern horse and carriage or sleigh today (see Fig. 6). This is supported by the fact that the rattles were found with hooks (Fig. 13), indicating that they were meant to be attached to something somehow, supposedly on hooks at the sleighs.

The Oseberg sleighs must be discussed. Among the treasures from the 830s AD found in the Oseberg burial mound were four sleighs (Gansum, 2004, p. 36). These sleighs are of exquisite craftsmanship, not to mention remarkably well preserved. The sleighs were displayed to the public in the Viking Museum in Oslo. The Gokstad ship also featured one sleigh among its artefacts. The sleighs consist of a frame that is fastened by rope to the undercarriage. According to the Cultural History Museum (KHM) in Oslo, a sleigh would have been pulled by two horses harnessed to the opposite sides of a shaft. The sleighs are rich in carvings and would have been time-consuming to craft. The sleighs were also painted atop the carvings in strong colours

to enhance the carvings' prominence. The colours were clearly visible when the sleighs were excavated but can unfortunately no longer be seen due to the circumstances of the conservation process. The sleighs were undoubtedly made for pageantry, evident from these extravagant decorations. (KHM, 2016).

The second purpose is based on their capacity to make sound. The instrument has multiple excess rings attached to the main 'bow' (see Fig. 6 and 7). The purpose of the sound can be discussed; however, the general consensus is that they would have served a similar function to bells on modern horse gear. This would be to alert other people and animals on the road or path of the horse's presence, perhaps especially during evening- or night-time when visibility is reduced. In the context of Younger Iron age Scandinavia, this would be necessary to prevent pedestrians being run over by a horse or the collision of passing sleighs during the long winters where the sound would be muffled by snow. This sound could also scare off feral animals. The fact that the rattles always appear, though in various degrees of preservation, with the excess rings attached, gives validity to the suggestion that the rattles were used primarily to make sound whilst attached to the horses or sleighs, and that they probably just doubled up as a connective tool.

Whilst the primary function might be tied to horses and sleighs, this does not mean that the rattles would not have secondary purposes. As suggested previously there could have been superstitious functions for the rattles, though this is a bit more speculative. For instance, they could have had a ritual function such as fighting off evil spirits or mythological creatures. Scandinavian folklore features a large cast of forest and mountain dwelling creatures with ill intentions towards men (Bane 2016, p. 117, 378). If the rattles were believed to have had the ability to fend off supernatural beings, then it is not unrealistic that they could have been used by hand independently from the horses. This might also explain why they seem to be somewhat frequently included in burials, for example rattle C240, which has a decorative handle (Fig. 7). It could be surmised that the deceased would use the instrument in the afterlife, similarly to the grave goods buried alongside the people of Ancient Egypt (Morris 1992). In addition, the fact that the rattles were most likely used with horses, does not exclude them from functioning as rhythm instruments in a musical setting. It is frequently seen in other musical cultures around the world that people are eager to use what they can to create music, repurposing everyday items as musical instruments, for example the American

musical jug, spoons or the washboard popularised in the 1920s (Shepherd and Horn 2012, p. 36).

The fact that there is a high frequency of rattles found in burial sites could point to another ritual purpose. Artefacts included in burials vary greatly, but more often than not, the items are of a higher significance to the person or have some economic or ritual value, like the aforementioned grave goods. With this in mind, the rattles would likely be considered more valuable than something like a willow flute, which requires little skill and material to make (Conard, Malina, and Münzel 2009, p. 737-740). After all, the rattles are made of iron which is a significantly more valuable material to the Iron Age Scandinavians than wood or bone would have been. Perhaps rattles were included because of their monetary value in addition to its potential ritual value, unlike a flute that might be more of a discardable item and was therefore less frequently buried with the deceased.

Bells

In my dataset, the bells are another significantly large category of sound-producing devices, with 21.8% of the dataset (see Fig.9), distributed almost equally between Vestfold og Telemark, and Innlandet on the Eastern half of Norway (Fig. 15). The bells appear in two different forms, the round jingle/sleigh bell, and the

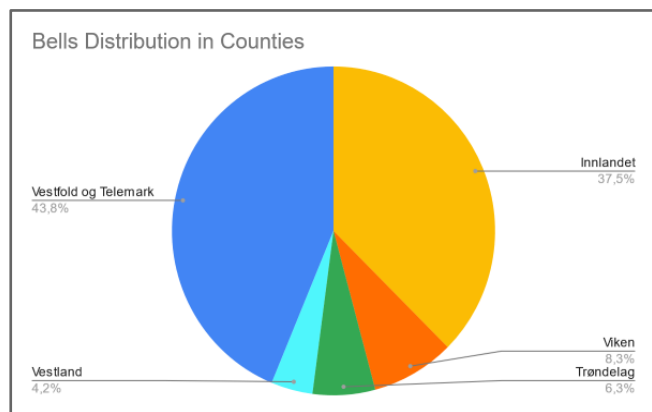


Fig. 15. Distribution of bells found in South Norwegian counties. (By Mikkel A. W. Totland)

rectangular cowbell. As idiophone instruments, the sound the bell produces comes from the vibration created by metal hitting metal. The Viking bells in my dataset are made from metal, mostly iron, but also copper and bronze, and therefore preserve in varying degrees depending on the pH levels of the soil (see Fig.14). The majority of the bells in my dataset, such as C25335, are in almost perfect condition, perhaps with minor fractures (Fig. 14), and show us just how little bells have evolved in the following thousand years. A word that frequently came up in some entries was 'Vikingtidsform' to describe some of the bells, meaning 'Viking Age shaped'. There does not seem to

be one set definition for this term, but based on the bells with this description, I have deduced it describes the bells which are soldered together from two halves, suggesting this method is a Viking crafting technique.

There are few instruments as universal as the bell. It can be found in countless iterations all over the world. After all, the bell is an instrument that was both played in ancient Chinese neolithic cultures as well as 'ceremoniously' on Christmas day in space five thousand years later. Therefore, the instrument is bound to have connotations attached to it. What bells mean, or have meant, to various groups of people is insoluble to answer, but bells have a history of symbolism that when interpreted has relevance in understanding their place in the archaeological record. Their use and significance perhaps mirror that of the rattles in Viking context.

During medieval times in Europe, superstitions were treated as scientific facts, and sometimes certain powers were attributed to specific items. For instance, the bell was believed to be able to fight off evil spirits. This was not just a pagan belief, but was also condoned by the church (Sullivan, 2009). Due to these past connotations and sacred nature of the bell, it is laudable to speculate that the bell was similarly used in Younger Iron Age rituals. As mentioned briefly previously, in the Old Norse societies, there was a ritual called 'blot', which is a pre-Christian ceremony performed in sacred places. Among other locations, the ritual was performed on barrows, or burial mounds, which ironically, is something we know due to Christianity subsequently banning these practices. Nevertheless, the beginning of a blot was marked by a musical incantation as Ahmad Ibn Faḍlān mentions. The musical incantations would be something like a song, blowing a horn or the ringing of a bell. I would deduce the use of a bell as a likely opening to the blot, as the sound is distinctive and far carrying. Christianity also adopted the use of bells to open and end ceremonies in the protestant church; this was perhaps adopted from 'heathen' rituals. It is possible that this is the reason why bells are frequently found deposited in burials, not only as an instrument for the deceased to use in the afterlife, likewise to the rattles, but also if a bell marked the beginning of the burial, it could have been left with the dead to complete and finish the ceremony.

Bells and rattles have many similarities. They both have well-defined, far-reaching and monotone sounds, and in the archaeological context both are frequently

found in large numbers at burial sites (Fig. 9). If we assume from this that bells and rattles did serve similar functions, we can suggest that the bell could have also been used on horses. For instance, the bells, when attached to a horse or sleigh, could be a warning to other people on the road, as well as fend off spirits lurking in the woods, in a similar fashion to the rattles.

Wind Instruments

There are in total 12 flutes in my dataset, representing 5.5% of the whole dataset (Fig. 9). This is the only category that initially had any significant numbers further North than Trøndelag, the Northernmost parameter of the dataset, including the significantly well-preserved TS11985 which is described in chapter III.2.1. Of the remaining 12 flutes, 9 of them are in a well-preserved condition, whilst only 3 of them are fragments (Fig. 16). Interestingly, the largest portion of flutes are found in Trøndelag, with a majority of 66.7% (Fig. 17). This could indicate that flutes were more commonly used in regions further North. It could also be that the soils in

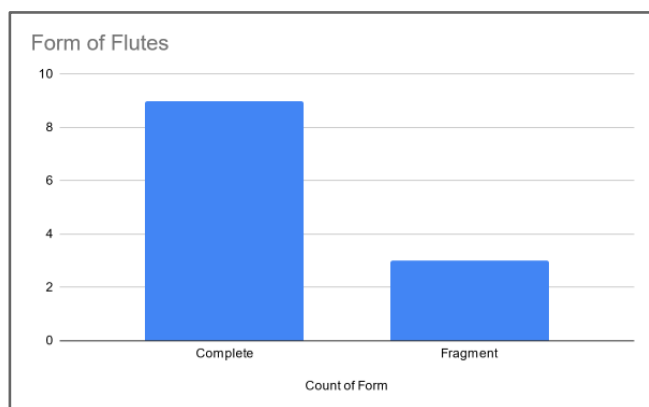


Fig. 16. Conditions of flutes found in Southern Norway. (By Mikkel A. W. Totland)

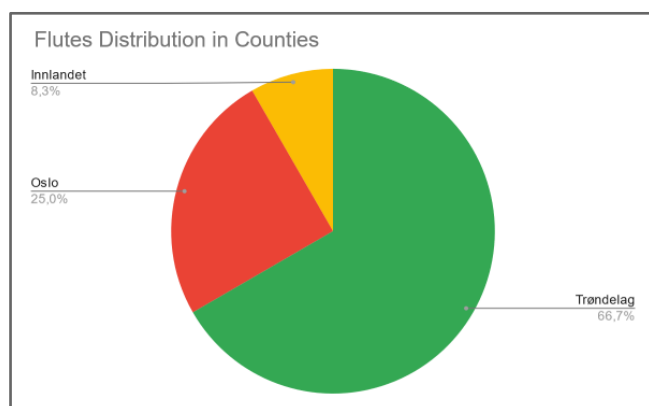


Fig. 17. Distribution of flutes found in South Norwegian counties. (By Mikkel A. W. Totland).

central and Northern regions have different pH-values than what is typically found in the Southern regions, although I do not have data to support this. A last point to consider is that attempting to draw conclusions on the basis of only 12 datapoints is not sufficient to draw any viable conclusions.

The second largest county in terms of flute finds is Oslo, which is Norway's capital and smallest county, with 25% of the flute data (Fig. 17). This is odd, as Oslo

is underrepresented or absent in most other instrument categories. A potential reason for this surge of flutes found in Oslo could be attributed to a few factors. Firstly, Oslo is an area with a great amount of human activity over a long time, so many flutes might have simply been deposited there over the years, and subsequently found due to the continuous use and activity in the area. However, this does not explain the lack of other instruments found in Oslo, other than perhaps the ease of crafting flutes made them common and/or they experienced good conditions for preservation. Secondly, there is a likely chance that the number of flutes can be attributed to inaccurate dating. I can speculate that some of the flutes could have been dated loosely in the early 20th century to the Viking Age, whilst the artefact might have, in actuality, been from mediaeval times or later, and the dating of these old instruments have simply never been verified with modern methods.

The one horn in the dataset, T6220, was found in Trøndelag (see Fig.1). It has drilled holes in it, but lacks a clear embouchure hole, where air would have been blown into it, which is why it has been disputed to what extent this was in fact a musical instrument. However, there has been no better explanation presented to lead me to believe this is not an instrument. This, partnered with the fact that it simply looks like a musical device, indicates to me that it is such, further backed up by its similarity to other musical horns found in Sweden.

Mouthharps

Mouthharps are responsible for 4.1% of the dataset collected (Fig. 9). Mouthharps are found with very little evolution even through a long time period and geographic variation. This makes them tricky to date in terms of style alone. For sake of listing potential errors, this could have led to some discrepancies in terms of the

dataset's accuracy. The distribution of the mouthharps is fairly evenly spread between Trøndelag, Vestfold og Telemark, Agder and Innlandet (Fig. 18). Surprisingly, Oslo

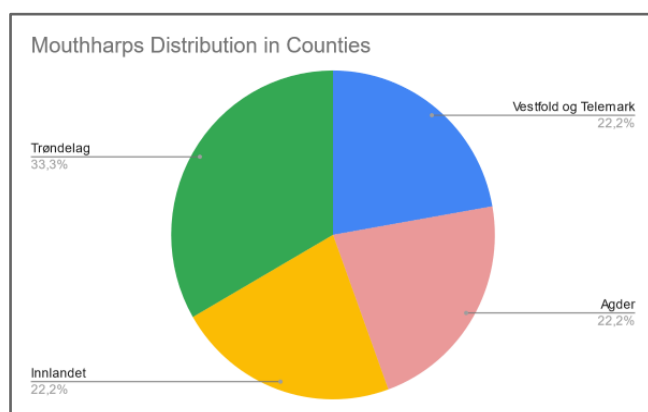


Fig. 18. Distribution of mouthharps found in South Norwegian counties. (By Mikkel A. W. Totland)

and Viken are not at all represented, which is hard to explain. Perhaps this is due to inaccurate dating, or just because fewer have been found or identified in this region for whatever reason.

V.1.3 - Distributions and Statistics

We can see a distribution pattern emerge when we look at the distribution map, Fig. 19. Vestfold og Telemark is the county with the largest number of instruments, and the Western regions are much scarcer. There are a few potential explanations for this. Firstly, there are some biases in the dataset that I did not anticipate before I set out to create it. Mainly that I chose to use the new counties as of 2020, when several previous counties merged. This might have majorly skewed the data as, for instance, the South-Eastern parts of Viken, the old county of Østfold, would likely have had a much richer archaeological records for Viking artefacts than the Northern parts of Viken, such as Buskerud with larger portions being far inland. In

essence, the new counties create inaccuracies, and are too large and diverse both geographically and historically to yield accurate distribution patterns. If I were to recreate the dataset, I would likely have used the old county system or perhaps even base the data on municipalities. Perhaps a chart of instruments per square metre would be more descriptive.

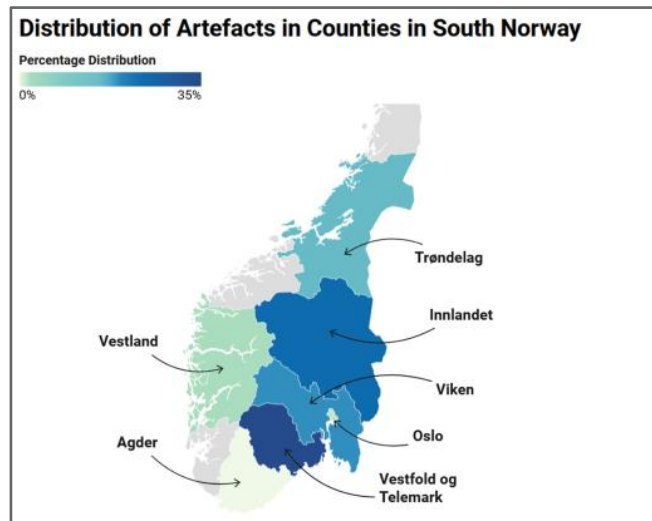


Fig. 19. Distribution map of instruments found in the various counties of Southern Norway. Grey regions have either 0% finds or no data. (By Mikkel A. W. Totland)

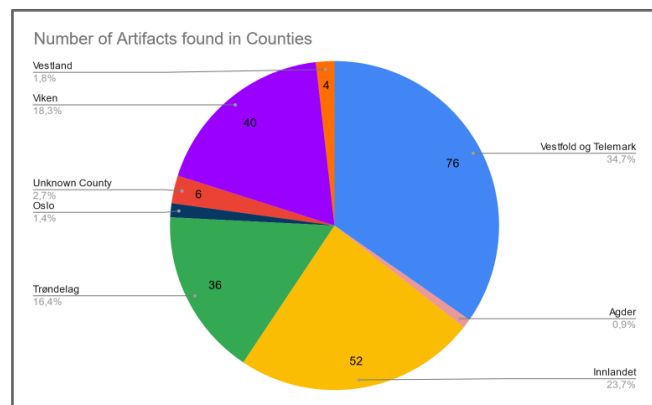


Fig. 20. Percentage of instruments found in South Norwegian counties. (By Mikkel A. W. Totland)

In the light of that, we can start to analyse the distribution data that can be collected from this distribution map. The Eastern regions, such as Vestfold, Oslo and Viken have had a multitude of Viking activity within its regions, an example of this is how all Viking ships excavated in Norway were unearthed in either Østfold or Vestfold, the regions around the outer Oslo fjord. This could mean that there is a greater likelihood for finding Viking artefacts on the Eastern coastal regions.

There are also some modern aspects to consider that increase the likelihood for making Viking finds in Eastern Norway too. Firstly, University of Oslo is the oldest university in Norway, and has the largest archaeological constituency in the country. This might mean that, historically, regions near Oslo could have been prioritised, had more resources for archaeological research or been of greater interest to the University of Oslo than more distant regions. In addition, Eastern Norway has seen large infrastructure projects such as road and train expansions over the last few years, more so than other regions might have, due to the high demand for these upgrades to and fro Oslo. Recently Oslo and its adjacent cities have rapidly expanded. This large project has in turn initiated archaeological excavations along the routes of the new roads and tracks.

In essence, the large-scale infrastructure projects have increased the number of excavations done in these regions, meaning that more archaeology has been done on the East coast rather than on the West coast. Secondly, the mountainous West coast faces different infrastructural problems than the flatter East country. Where in the East country, roads are built on land, where humans have lived, the West spends more of their resources building bridges over fjords and tunnels through mountains. This is of course an oversimplification, but it can still explain the uneven distribution of musical artefacts, from a modern perspective. However, using this reasoning, I can suggest that the areas more commonly lived in and developed on today, were the more popular locations for Viking settlements due to the more habitable environment.

The second most artefact-rich county is Innlandet. Innlandet is the only landlocked county as of 2020, which makes the fact that there are so many finds there from the Younger Iron Age era very interesting. I would probably argue that this is because this region is relatively flat and rich with Norwegian farming and forestry history. People have been working the lands of this region for centuries. The

instruments present in Innlandet are primarily bells and rattles. This makes sense as these instruments could serve a practical function for farmers for the reasons discussed in chapter V.1.2. Some of Innlandet's regions, such as Hedmark, is also featured in Snorre's Younger Edda, as the kingdom of Solør between 300-800 AD, which goes to show the long history of the region as a powerhouse, in turn making it a natural location to find cultural artefacts.

The West coast is rich with Iron Age history, and burial mounds and piles can be seen all along the coast of the fjords. It is strange how little data there is on musical instruments found in these regions. Perhaps it is due to a less complex trade network from the South, compared to their Eastern tribal counterparts, or perhaps it can simply be attributed to a smaller number of excavations in these regions as the villages along the fjords have seen less development in the last century than the larger cities. Another potential explanation could be that the conditions for preservation on the West coast are different, as it is exposed to more extreme weather and saltier winds. This climate especially limits the potential preservation of the organic variants, with much smaller odds of surviving. In addition to this, the winters are milder on the West coast, so sleighs and horses would not be as viable means of transportation in most scenarios compared to, for instance, boats that utilise the waterways of the Western fjords. After all, the largest artefact groups are rattles, which might not have been as common on the mountainous West coast as in the East. Of course, there could also be other unknown factors that I have not considered.

Overall, from this data there should be a discussion on whether the various instruments found in different geographical locations indicates different musical preferences even internally in Norway. The distribution of artefacts means that some sounds would be more typical of certain regions, with the functions of the instruments having more or less value depending on the county, for instance as suggested above, rattles are found primarily on the Eastern counties due to their presumed association with horses and sleighs (Fig. 10). However, due to the relatively broad distribution of instruments ratioed with the frequency of finds, we can deduce from the distribution patterns that there could have been a 'universally' Viking sound. My assumption is that this consisted primarily of percussion instruments that maintained rhythmic one-toned sounds, accompanied by steady earthy pitched notes.

V.2 – Migration and Immigration

We know that the Scandinavians of the Iron Age were travellers, journeying and occasionally settling away from Scandinavia. In addition, people from different origins also settled in the Scandinavian regions, and interbreeding was common. This would mean that many instruments and musical concepts would not be exclusive to the Vikings, and perhaps not even representative of all the Scandinavian people at the time. Therefore, we could assume that the musical identity of Younger Iron Age Scandinavia was a slew of different concepts from the tendencies of Viking migration and immigration.

We can safely say that a flute that has been proven to exist evenly spread out over Northern Europe will be more characteristic of a sound that would be present in the musical soundscape of the era. Meanwhile, an obscure and unique item would not necessarily be a common sound to hear in a musical setting in the Viking Age. However, the habits of Norsemen could suggest that 'Viking music', as a concept, is a lot more diverse than we'd expect and perhaps had a habit of importing musical ideas and incorporating foreign instruments into its musical culture. Another suggestion would be that the Vikings, as a people, had an interest for music and potentially a fascination for diverse instruments and sounds when ensuing their reputation for travel.

We know for a fact that some instruments of the more unique kind, such as the rubec, were an import. It is not far-fetched that this would be rather common for people that were merchants and avid travellers. This would perhaps be the case more so in Southern Scandinavian regions, such as Denmark, which are attached to continental Europe, than for instance Norway whose primary travel corridor to Europe involved seafaring. It should absolutely be considered that the Vikings, either through pillaging or trading, would have acquired a number of foreign musical instruments that have not yet been discovered.

In addition to the odd imported instrument, there are also instruments that have their conceptual origins in other parts of Europe, such as any string instrument. String instruments are more 'technologically advanced' than for instance a drum and it can be assumed that they would have first been developed in more complex musical

cultures such as the Middle Eastern or Mediterranean nations that have had a longer history of advanced social organisation (Jahnel 1981, p. 15), as seen with the lyre.

As a seafaring people, it can also be considered that the ancient Norsemen would have brought home not only the instruments that we may find in the archaeological record today, but also musical concepts, melodies and compositions. They could have made music inspired by their journeys and adventures, borrowed melodic elements from places they visited or simply learnt songs and melodies from the places they travelled to.

Of course, by this logic, the Vikings would likely have left behind some of their musical culture in distant regions too (for instance chapter III.2 on the panpipe). Either through trading away artefacts, but also by teaching foreign merchants their musical traditions, melodies, and songs. Furthermore, many Scandinavians settled in regions outside of Scandinavia at this time. For instance, most obviously, the Viking settlement in York, which would have likely had an at least subtle influence on the early music traditions in England.

A final point to make is that the Vikings famously held slaves, or thralls, which were frequently women and usually abducted from their homelands during raids abroad. These slaves represented various cultural and genetic origins ranging from Slavs and Balts to inhabitants of the British Isles. These slaves would bring their own musical history and preferences with them, which one can imagine held great importance to these individuals, as, as already suggested, would have represented a sense of identity. This, I would speculate, would be the biggest foreign influence on the Viking music, as many of these slaves carried forth and raised Norse children. It can be argued that the songs the thrall mothers sang, would be songs and lullabies of their previous homelands. However, we can only speculate on this.

V.3 – Oral and Musical Traditions

It cannot be ignored that most people of the Iron Age were illiterate. This would mean that musical knowledge was transferred from one generation to another, or from master to student. We can see this being the case for Norwegian folk music that was not transposed until the 19th century, during the National Romantic period. Oral

traditions are strong, and I would argue they embody a core human behaviour. Whether on a macro scale, where our primate ancestors passed down knowledge of which berries were poisonous or what sites are beneficial for hunting, or micro scales such as the children's rhymes in a primary school which outlasted the pupils who came up with it, due to a form of oral tradition. Oral tradition is necessary to acknowledge and understand when researching past civilisations, and no less when discussing their music.

One may suggest that studying elements of more recent oral traditions can reveal elements of its preceding music, as it is likely also a direct descendant. It can be speculated that some of the musical preferences of the Vikings may be similar to some of the tonalities of, for instance, Norwegian folk music or Scandinavian herding calls that are quite melodic in form. A compelling argument that can be made is that traditional music and oral traditions in remote parts of the world have had the chance to remain relatively isolated due to their secluded nature. Whilst the mountainous regions of Norway and sparse population of Northern Sweden have been physically segregated allowing for their cultures and traditions to be preserved, in comparison, East Norway, South Sweden or Denmark, for example, are much flatter and hence more prone to homogeneity.

Lastly, virtually anything can be used as an instrument. If it can make sound, it can be used in a musical setting. All humans, regardless of status or musical abilities can clap, stomp, and learn to whistle and snap fingers. A stick on a log, a sword on a shield or a tankard on a table can be used to partake in musical activities, and are socially learnt behaviours, which can be considered an extension of oral tradition. We can assume that people frequently used what was around them to make music, and so therefore it is fair to speculate that musical traditions like these continued to be used and practised, due to the environment and material around them. For example, the Chinese Dizi bamboo flute, which is still crafted and played today, was first discovered over 9000 years ago (Holmes 2013) and shows the continuous use over centuries of a material, abundant around a group of people, as a sound-producing device. This also demonstrates a "if it ain't broke, don't fix it" mentality towards musical traditions, elements of which might be present within Scandinavian culture as well.

To conclude, oral and musical traditions do add value to this discussion. It is possible for us to use elements of the Scandinavian oral traditions for a presumption on tonal preferences, especially within reconstructions. Although other than speculation, we cannot assume any connection, therefore this must be done with caution as only the knowledge of human behaviour and the nature of traditions can give evidence that Viking music and folk music sounded alike. We can say, however, that centuries old musical traditions of Norwegian folk music have probably had an influence on the stereotype of 'Viking music' within popular culture.

V.3.1 – Rituals

It is known through literary sources that music and sounds played a crucial role in the rituals of Younger Iron Age Scandinavia. This is evident from first-hand accounts such as Ahmad Ibn Faḍlān discussing the blots, or from numerous Snorre sagas. I would argue it highly likely that musical instruments would have been considered to have had specific mythological properties and affiliations for a number of reasons.

Firstly, certain instruments are associated with certain gods or legendary characters. The fact that, for instance, the billy goat horn was associated with the god Heimdall, or the lyre associated with the skald God Brage demonstrates the connections between musical instruments and the divine. Furthermore, instruments are also frequently played by mythological creatures in Scandinavian folklore, such as the mischievous 'Fossegrim', typically living in waterfalls and is believed to play string instruments with immaculate skill, or 'Nøkken' luring its victim with beautiful music and song into its pond. Another example is the devil being known to play the fiddle the wrong way round in Norwegian folklore. These are examples of how musical instruments and prowess can be associated with something otherworldly, making a significant connection between music and rituals.

Secondly, there is emphasis in Scandinavian folklore on fighting off evil beings, often with the use of amulets or trinkets to protect oneself. In Scandinavian folklore, throwing steel, for instance a needle, in a pond or river will fend off evil water dwellers such as Nøkken. Yelling Nøkken's name or performing rhymes like spells can also be used to fend off these spirits. This points out the importance of sound ritual power. The

same principles can be applied to instruments, such as the aforementioned properties of bells and rattles. The rhymes could also very well be iterated as songs, although this is speculative.

Thirdly, archaeological material from many musical cultures supports the theory that musical instruments had special properties, especially due to their inclusion as grave goods, as mentioned with the use of rattles in chapter V.1.2. As already suggested, if musical instruments were believed to serve as a form of protection for the deceased Vikings, and/or were used before, during and after a ritual, it would give reason for these instruments to be included in a burial.

I would argue it would be hard to deny that music and sounds would have played a crucial role in Viking rituals. Rituals are heavily reliant on sensory impressions, and the stimulating properties of music and sounds, as evident by neurological research described in Chapter II.2.2 (Baird and Samson 2009, p.85-101; Blood and Zatorre 2001, p. 11818-11823). Even in modern rituals and ceremonies, music and sounds play a key role, such as music in a religious service i.e., carols at Christmas, or the sound of the gavel in a courtroom which functions as an authoritative proclamation or call for attention. The sounds or music we hear and associate to particular events, whether it be good or bad, have an impact on the emotions and feelings we in turn associate with that event, for most of the Christian Western world, you cannot hear jingle bells without thinking about the upcoming holiday. The same would have been true for Viking rituals. To quote an important statement from the Fritz et al. publication once more; *“there is no ritual or celebration without accompanying sound”* (Fritz et al. 2021).

V.4 – Codex Runicus

The Codex Runicus is the most important source of literature when analysing Younger Iron Age Scandinavian music. As already explained in chapter III, the Danish law book from the 1300s contains the Norse song called *‘Drømte mig en drøm i natt’* meaning *‘I dreamt a dream last night’*, and to reiterate, this song is often considered to be the oldest known Scandinavian song (Lie, 2009).

V.4.1 – Content of '*Drømte mig en drøm i natt*'

The contents of the Codex Runicus include Danish laws and church affairs, as well as historical stories of Danish kings and royal lineage. The song was written on the last page of the book and, along with the rest of the Codex Runicus, was written using the rune alphabet. This gives context to the book's age, implying a pre-Christian origin. The inclusion of the song in this book emphasises its significance at the time and therefore indicates that it was well known. This could suggest that the song probably has oral traditions going further back than the text.

The notes of the melody are written on a four-line stave (the horizontal, parallel lines that indicate the pitch) which is commonly known as Gregorian notation. This format was designed primarily to notate sacred chants from the early 2nd millennium AD. The note is marked on the stave at the start of each lyric or syllable; this notation is called a neume. Neumes are composed of all the notes that are sung during the same lyric, so when there is a column of notes written in the same neume, this is not a chord but a pitch change. These are read from left to right and from bottom to top. The neumes in the song in the Codex Runicus are shown as a filled black square indicating the pitch on the stave. This follows the notes in the modern scale, with the same intervals, C, D, E, F, G, A. In the case with all Gregorian notation, the Codex Runicus song includes only the pitch of the note, meaning the singer or musician must decide themselves the length or duration of the note, therefore the melody can differ from interpretation to interpretation. In some cases, indications of length as well as breaths, or rests in modern notation, are written, however this is not apparent in this instance (Apel 1958, p. 99-106). Although the rhythmic side of '*Drømte mig en drøm i natt*' is still up for interpretation, there is general agreement on how to read the melody. The most famous interpretation is the one by the Danish national radio, which used this tune as an interlude or jingle between programmes. This version is a trochee, essentially altering stressed and unstressed syllables. However, it is also suggested that it follows a four plus four bars structure, common in old traditional music (Persson, 2000, p. 7). Due to the nature of Gregorian notation to record sacred chants, the notes are almost always accompanied by lyrics.

The lyric of the song goes as follows: “*Drømde mik en drøm i nat um silki ok ærlík pæl*”. The meaning of the lyrics has been subject to some debate. The most common interpretation is “*I dreamt a dream last night of silk and fine fur*”. Where ‘silki’ might be an Old Norse word for ‘silk’ and ‘ærlík pæl’ meaning something akin to ‘honest/true fur’. This is supported by the Mediaeval Swedish folk tune ‘Palle Boosons visa’. Which refer to silk and fur too, written ‘silke’ and ‘ädel päll’ (Arwidsson, 1834, p. 199).

V.4.2 – Context of ‘*Drømte mig en drøm i natt*’

However, Swedish music scholars Åke Person and Johannes Holmqvist point out that this most common interpretation is assumed without the song’s context in mind. The context being that it was written at the end of a Scandinavian law book. Furthermore, the song appears to have been written by the same hand that wrote the rest of the law book. One may then expect the lyrics to be concerning justice rather than luxury (Persson & Holmqvist, 2003). Alternative interpretations then could be “*I dreamt a dream last night of justice and fair play*”. This suggests that ‘silki’ means something akin to ‘justice’ or ‘equality’ and ‘ærlík pæl’ meaning ‘honest/fair measure/play’. This is further supported by the fact that ‘ærlík’ (or ‘ærlig’ in modern Danish and Norwegian) is used on the very first page of Codex Runicus meaning ‘honest’.

Besides the music’s theoretical and contextual clues, there is also the greater historical picture. The Latin alphabet was introduced to Scandinavia with Christianity between 900 and 1100 AD. The vast majority of all writings in ink following this were written with Latin lettering, with the rare exception being the Codex Runicus script (Crawford 2017).

V.4.3 Reconstructions

With a folkloric song this important to Scandinavian music history, it is only natural that many artistic interpretations and recreations have been attempted. Many such reconstructions have been made as academically as possible. In chapter IV.2, I discussed Dr Crawford’s rendition of the song. Crawford is a scholar on Old Norse and

Old Norwegian and recreated this tune using his educated guesses to interpret it. He made a few alterations to the song to align it with his specialty of Old Norwegian phonology (Crawford 2017). He is however far from the only one that has attempted to interpret this song.

Åke Persson created sound bites of various different interpretations of '*Drømte mig en drøm i natt*' allowing us to hear multiple reconstructions from earlier academics. Persson uses a piano simulation on a MIDI (Musical Instrument Digital Interface) software which gives a simple and comparable format that allows us to focus primarily on the various rhythmic concepts, such as duration and tempo.

A point to stress is that music concepts and perhaps even preferences change due to their context. Throughout history traditional melodies may have varied in their sound due to where they were played or performed. From what we know from the prevalence of medieval folk music in Scandinavia, it would not be unreasonable to believe '*Drømte mig en drøm i natt*' sounded like Scandinavian folk music, with a traditionally upbeat and fast tempo, in contrast to the slower, far-reaching sounds made for a Christian church audience.

Overall, however, both the content and context of this song creates a muddle of different concepts and cultures. The Gregorian notation suggests the early Middle Ages, the rune lyrics suggests much older, the law book which contains the song was written after the christening of Denmark and so suggests a medieval Christian influence. Although this seems like an archaeological nightmare, this does allow for different interpretations and reconstructions based on these various preferences. This therefore permits a greater artistic freedom.

'Drømte mig en drøm i natt' is a fantastic source for us to analyse. It gives us insight into tonal preferences and melodies through the notation. This transcribed song could warrant a thesis on its own and would benefit from being accessed from more angles, such as through experimental methods, combining it with various instruments from the era, as we do not know what contexts it was played in or with what instruments.

V.5 – Tonal preferences

To round up one of the questions I've had in the back of my mind throughout my research, 'what did the music of the Vikings sound like?', I would like to make an educated guess on the tonal preferences and inclinations of the Younger Iron Age Scandinavians.

The communication between the Scandinavians and its neighbouring people is indisputable. We know from historical sources and archaeological record that trade and travel was common in this era, and the Vikings were extremely well travelled and experienced a vast number of foreign cultures. I would argue it is safe to assume that Viking music was complex and diverse and was constantly influenced whilst influencing others.

The music would likely have evolved throughout the course of the Viking Age, as the Scandinavian music culture from before the christening of the region would not have featured Christian musical ideas and concepts to the same extent as mediaeval Scandinavia would. Christian music was composed in a specific way, clear and articulate, enabling it to travel far and spread its message in a great space like in a church or cathedral. Using what I already know about Viking behaviour and practices, Viking music would likely not need the same niche as their structures were smaller and more intimate, and larger scale rituals like the blot would have found a place outside, where perhaps louder and more steadfast rhythms would function better acoustically.

Despite the changing musical ideals and the evolution of concepts from outside influence, there would still likely have been some distinctive musical identifiers. I would break this into three categories, which can in some instances overlap, firstly, the songs of tradition. Melodies, songs or musical concepts that have a traditional value, such as those learnt from master to student through oral traditions, ritual purposes or symbolical meaning. For instance, like a lullaby, a birthday song or children's rhyme.

The second category is what I would call music of crowd identity. These are songs that unify people in some way. This could be a drinking song or an chant of some sort. Perhaps a song that describes the beauty of the land back home or so on, for example, a national anthem.

Lastly, the category of music with a practical purpose or function. For instance, the ancient Scandinavian tradition of herding calls or 'kulokk' has existed in remote fjords and valleys for generations upon generations. These songs might have remained mostly the same, delivered by each generation's parents, because it 'does the job'. Of course, these are categories in my head, and not a general consensus among musicologists or historians. However, these types of songs are less likely to change over time or by large events and so perhaps versions of Vikings songs or melodies do still exist today. It is very difficult to pinpoint the exact origin of music in the format within these categories.

Another factor to consider when understanding the Vikings' tonal preferences is the physical limitations of their various instruments. Similar to the way the human voice has a limited register of sounds and pitches it can make, the same is true for instruments. Some instruments, such as the mouth harp or the lur, can only reach nature tones. This can in fact tell us something about the rough scale and pitch that the Vikings would have been able to produce through their instruments. Traditional Norwegian folk music, as well as numerous string instruments of the era and the mediaeval era, utilised micro tonalities, which is what makes the traditional fiddle music's tonality sound so iconic. I would therefore propose that the Viking music was played in traditional Western scales based on natural tones, much like the other European musical cultures at the time, with melodic elements consisting of micro tones among regular tones and semitones.

In essence, I believe that the Viking music would be a close relative to the folk music of the national romantic era. I would argue that Viking music is a form of 'proto-folk music'.

V.6 – Scientific and Artistic Outcome

By analysing and creating an understanding for how the music of Younger Iron Age Scandinavia sounded, we can then discuss the 'value' it adds to both academic discussions and modern artistry. With a more accurate comprehension of Viking sounds and preferences, both the scientific and artistic circles alike can give a more valid interpretation in their respective fields.

V.6.1 – The Science

The scientific outcome from this research comes from analysing as much as possible of the source material available to us to date. This includes all iconographic, literary, archaeological, and historical records. This data allows us to draw conclusions based on scientific understanding of human behaviour to help us determine the musical culture. As mentioned before, this also works the opposite way round. Everything we learn about Viking music can add to our knowledge on the Younger Iron Age Scandinavian people.

By borrowing knowledge and consensus from other lines of research within the music archaeological community, we can start getting an idea of what types of behaviours can be expected from the people in question. For instance, comparing the traditions and cultures of Scandinavia with that of other Iron Age cultures can indeed give insight into the complexity and capability of humans at this time. An example of a culture in this time period that can help us understand the potential for the Vikings at this time, is the exceptionally well researched Roman Iron Age from 1 to 400 AD. We know the Romans had an extremely high functioning civilisation which contained a plethora of instruments and sound-based entertainment. Their music was infamously monophonic which aligns neatly with the capabilities of the sound-producing devices found in Norway. From this it could be possible for us to deduce that the Vikings were equally high functioning when it came to their social activities and entertainment. This is an example of how knowledge of music goes hand-in-hand with human behaviour, and that the more information we have on known cultures, the more judgments we can make about unknown peoples. This, therefore, shows the impact music archaeology has on academia.

Analysing the musical material culture through a dataset to look for statistical tendencies is empirical in its nature. This may give a new and structured overview of the material in question. By viewing all the items at once and being able to visualise the data in various formats, such as how I have done in my dataset and figures, allows me to emphasise upon different elements of the data. This beats a long category of artefacts in list form which allows more for human error. The technology available to us today opens the door to brand new ways of viewing the past, from basic computer science like statistical coding and even Excel, to the future of historical research which

may utilise AI in its reconstructions. The benefits from adding to the field of music archaeology in a scientific manner, allows for the discipline to become more recognised and used in these other scientific and more technology-based areas.

V.6.2 – The Art

The artistic benefits of historical music research are many. Interpretations of the Viking musical heritage have been composed continuously over the last few centuries along with cultural awareness. From Edward Grieg's composition for his uncompleted national operetta written in the 1870s, Olav Tryggvason, to the modern metal band genre; 'Viking Metal'.

These musical examples are based on the knowledge available at the time, as well as building on what came before it. These examples are far from academic in their expression for multiple reasons. Mainly, music created with the intent of serving as entertainment will utilise musical practices that enhance the experience of the listener. For instance, Grieg's operetta would borrow many musical elements from the Wiener Classicism, as that was the 'popular music' of his time. In addition, this music was composed to favour the historical narrative of the Viking identity and the glory of a Viking king, Olav Tryggvason. Similarly, Viking Metal is a hard metal genre, but includes elements of what is thought of as Viking. A pure academic reconstruction has much lower entertainment value than some fantastical composition made for a TV-series or video game. As interesting as a pure reconstruction of a Viking flute's sound is to a music archaeologist, it is likely to be rather underwhelming to an average listener who might have a more fantastical idea of what Viking music is, through media and popular culture.

As interesting as the scientific recreations of Viking music are to an academic, its scientific value is likely to be somewhat minor in comparison to the artistic outcomes. By this I mean that the amount of information and value that can be added to the academic debate of Viking music is not as large as one may first think. It is unlikely to divert massively from the expectations, and at the end of the day, it would only be an educated guess and at best confirming a theory's plausibility. This does not mean that academic reconstructions are a waste of time. On the contrary, academic

reconstructions pull together all known sources into one short summary of sound. However, the artistic value of this type of research outweighs it drastically. It can be viewed as furthering the Scandinavian heritage, and can be very inclusive, as it has a far-reaching and broad appeal. To put it simply; artistic reconstructions most likely have a far greater reach and positive effect or influence on people, than an academic reconstruction typically would.

Chapter VI - Conclusion

At the end of the day, there is no way to know with complete certainty what the music was like in Scandinavia during the Younger Iron Age. However, we can assess with great accuracy their sounds. Between archaeological evidence, literary sources and technological tools we can begin to assemble a vague understanding of the Vikings musical capabilities. With archaeologically grounded facts, artists and musicians can create interpretations of Viking music. One of the great benefits of this is that music archaeological research may be for everyone to use and become available to the public. Artistic representations are great means of dissemination and communication to the public, not only sharing knowledge of dead music, but archaeology and public archaeology as a whole. The value added to both the academic and artistic communities is great, but also where they overlap, such as living history museums, benefits heavily from this research.

Despite the limited music archaeological community and material in Norway, there is a surprising number of prospects for the study of the musical traditions and preferences of people in these Northern European regions. From cross analysing analogue cultures and assessing the available archaeological material, there is great potential for this academic field, especially due to remarkable resources such as the *Codex Runicus* and the song within it, that can aid our presumptions. Music and the sounds of the Vikings is an under-researched field, but with studies like mine acknowledging the need for a more in-depth look, I can predict a bright future for Viking music archaeology.

Technology is the way forward. Through my dataset I have been able to assess all the musical instruments from a large geographical area with an accuracy and efficiency that would not have been possible only a decade ago. Through the analysis of the dataset, it became apparent that some sound-producing devices are more common than others in certain regions, and that some instruments are more prone to decay than others, which tells us not only the instrument's functions, but also their conservable properties. The knowledge we learn from analysing the distribution patterns, allows us to make judgments on the behaviour of the Vikings as well as on their musical inclinations, and how perhaps there is a connection between the two, for instance the sounds or music present at Viking rituals or ceremonies.

Through both the dataset and analysing all other available resources, the contextual sound of the instrument or device starts to be apparent. Such as the rattles' potential for a more practical function as horse equipment, the lur's use as a communicative tool, or the mouthharp's purpose as purely an instrument for pleasure perhaps serving as an accompaniment to other instruments. The mythological and ritual connotations to various instruments also become evident which might be why they are so commonly found as grave goods, for example the bells and their supposed qualities as a deterrent of evil or as an opening for a blot.

This understanding of the instruments function or functions helps us to assess behaviour traits and patterns. From this we can deduce the importance and impact of music on Viking society. Due the prevalence of sound-producing devices within this culture, we can assume is vitality throughout all walks of life; from travelling via horse or boat, to burying the dead. Music had tremendous significance for the Vikings, much as it does for humans from all cultures. Although we cannot presume a certain feeling or emotion was associated with specific sounds, we can suggest music had a sensory value of the people of Younger Iron Age Scandinavia.

We will never know exactly what the music of the Vikings was like. But that is fine. It does not matter. Finding an absolute answer or making a carbon copy of dead music is not the point of musical research. Musical archaeological research is for the purpose of learning about 'extinct' civilisations through their musical cultures, and in turn perhaps learn about our own musical heritage.

Future research into Viking music

For future research on Viking or Younger Iron Age Scandinavian music I propose utilising this research as a framework for experimental archaeological trials. I would also encourage the inclusion of more experienced or educated musicologists and music historians, as I have no formal education in musicology. Furthermore, as time goes on, more archaeological data will be accumulated which might tell us more about the musical culture of the Younger Iron Age, perhaps answering some of the more explicit unknowns, such as the musical style and theme. In addition, music archaeological papers on Vikings using other methods and theories than what I have

used and potentially in other regions, such as Sweden or Denmark is something I would highly encourage. This would allow for comparisons not only between the regions, but also between the various conclusions reached using different methods.

For future research, technology is vital. Archaeology is a field where technological tools become available as new technologies become accessible for commercial use, such as the development of dating methods for other scientific fields which also having applications for archaeology. The same is true for music archaeological research. Artificial intelligence is a technology that has boomed over the last decade to such an extent that it has become cheap enough to be a liable aid in more niche lines of study, or even for recreational use, for instance, AI programs for generating text, based on key words or parameters.

Perhaps a project combining computer science and coding with music archaeology would yield valuable results. For instance, using synthesisations to produce sounds and compose music within the parameters of what historical instruments were capable of. This could open doors to a whole world of research. This would be less resource demanding as one individual could compose 'a Viking song' and edit it without gathering a cast of various musicians to play and experiment with the music and instruments, all whilst removing any way for modern musical impressions to be accidentally imposed on a 'historical piece'. Of course, this would not replace the actual recreated instruments and musicians, but rather a helpful tool to create musical mock-ups that are highly editable and regulated, before putting the compositions into practice with real instruments and musicians.

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Attachments

Dataset in PDF-format (attachment on following pages)

