Conceptualizations of the temporal organization of music

An interview study of double bassists from two different musical traditions
Sammanfattning

Denna studie handlar om musikens tidsmässiga uppbyggnad (Temporal organisation of music). Syftet med studien är att undersöka hur kontrabasister från två olika musikaliska traditioner tänker kring olika delar av musikens tidsmässiga uppbyggnad, specifikt inom jazzmusik och västerländsk klassisk musik. Målet var att utforska eventuella skillnader och varför de i sådana fall uppkommit. Respondenterna i studien har diskuterat hur olika lärare, likt forskare inom området, har olika tolkningar av aspekter inom musikens temporala organisering och hur detta har påverkat deras perspektiv på fenomen som puls, rytm, meter och timing.

I studien genomfördes fyra semistrukturerade intervjuer, två respondenter som studerar eller studerat ett kandidatprogram i jazz och två som studerar eller studerat ett kandidatprogram i klassisk musik. Empirin analyserades sedan genom teorin Community of Practice som fokuserar på hur individer ingår i olika grupper genom de intressen, expertområden eller fritidsaktiviteter de deltar inom. En del av Community of practice fokuserar även på hur gruppens vokabulär kan se ut, något som denna studie lägger stor vikt att analysera.

Studiens resultat visade att kontrabasisterna från de båda traditionerna i grunden konceptualiserade aspekter inom musikens tidsmässiga uppbyggnad på liknande sätt på en grundläggande teoretisk nivå. De definierade aspekter som puls, tempo och rytm på liknande vis, men deras konceptualiseringar av samma aspekter ur ett praktiskt förhållningssätt skilde sig åt. Eftersom de vistas i olika musikaliska miljöer och ensembleformer så påverkas även deras konceptualisering av dessa grundläggande begrepp av detta. Jazzbasisterna såg sig själva som en grund tillsammans med trummisen som resterande musik kan sväva mer fritt över. De klassiska basisterna såg också på sin roll inom musikens tidsmässiga uppbyggnad som någon som skapar en grund för andra, men de poängterade också att de lika ofta följer en annan stämma, en dirigent eller solist. Deras konceptualisering av specifikt puls var också mer flyttande, då tempo och puls kan vara mer fri och förändringlig inom deras musikaliska tradition.
Abstract
This study delves into the temporal organization of music and investigates how double bassists from different musical traditions perceive various components within it, specifically focusing on jazz music and Western classical music. The aim was to explore potential disparities and ascertain the factors influencing their emergence. Respondents in the study have discussed how various teachers, akin to researchers in the field, have different interpretations of aspects within the temporal organization of music and how this has influenced their perspectives on phenomena such as pulse, rhythm, meter, and timing.

Four semi-structured interviews were conducted, comprising two respondents enrolled in or having completed a bachelor's program in jazz and two in classical music. The empirical data underwent analysis using the Community of Practice theory, emphasizing how individuals, based on interests, areas of expertise, or leisure activities are part of communities. Particular attention was paid to examining the vocabulary employed within these communities, a crucial aspect in this study.

The findings revealed that double bassists from both traditions fundamentally conceptualized aspects within the temporal organization of music similarly at a theoretical level. They defined elements such as pulse, tempo, and rhythm comparably, yet their practical conceptualizations of these same elements diverged. Their musical environments and types of ensembles influenced how they perceived these fundamental concepts. Jazz bassists viewed themselves as establishing a foundational structure alongside drummers, allowing for other musicians in the ensemble to play more freely on the foundation they built. Classical bassists also perceived their role as establishing a foundation, yet they emphasized alternating roles, sometimes following a conductor or soloist. Moreover, their conceptualization of pulse was more fluid, acknowledging that tempo and pulse could exhibit greater variability within their musical tradition.

Key words: temporal organization of music, pulse, double bass, musical traditions, jazz, western classical music, pedagogy
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1. Introduction

It's time for a recording session with the third-year students on the music production program at an upper secondary school. Jonathan is set to record one of his songs with his jazz band while simultaneously capturing a classical string quartet. He has dedicated himself entirely to his string arrangement, confident that it sounds incredibly beautiful. His goal is to evoke the live feeling of a large ensemble playing in harmony. After ensuring all the cables are connected from the ensemble room to the control room and confirming sound in all instruments, the recording begins.

Initially, the performance sounds promising as the jazz band plays. They synchronize well, maintaining a cohesive groove. As they approach the end of the first chorus, the string quartet prepares for their part. According to their own assessment, they execute the piece nearly flawlessly. However, the recording is halted by Jonathan. The strings fail to align with the tempo established by the jazz band. He points this out and attempts another take. This time, the strings play nearly an eighth-note ahead throughout the melody. Jonathan is puzzled by what has occurred. He had previously cross-checked with his teacher to ensure that his notes aligned precisely with the melody presented. After four takes without success, he decides to postpone recording with the string quartet until later, allowing the band to establish the foundation. Once the jazz band completes their part and the recorded segment feels solid, he attempts to guide the string quartet by having them listen to the recording and play along. Unfortunately, this approach doesn't yield positive results.

The members of the string quartet express that they struggle to sense how the phrases relate to the pulse. The tonality is played correctly but the rhythm doesn't align with the recorded band. Jonathan struggles to grasp the issue at hand. It appears as though they don't perceive the pulse in the same manner as the band does. He provided them with a tempo to follow. Why can't they simply play to that tempo? After all, the band managed it so well. The clock is ticking and they have to move on in order to get the recording done. Determined to find a solution, he chooses to enter the recording room and physically demonstrate where he wants them to play using hand gestures. However, they consistently lag behind him in timing. It feels as though they aren't speaking the same musical language. It turns out that the classical musicians have a different relationship with the pulse; they are technically skilled, but in the musical contexts they usually perform in, the common approach to the pulse appears differently compared to the situation they are in now. When they discuss these musical aspects with Jonathan, it's as if the words they use carry different meanings.
In the realm of music, where notes and rhythm converge to create complex compositions, the perception of pulse stands as a foundational element, unifying musicians and their audiences in a shared emotional journey (London, 2012). Pulse in music serves as a rhythmic heartbeat, synchronizing with the composition and conveying emotions and messages from performer to listener (London, 2012). Pulse is an aspect of music that can be challenging to describe, yet it profoundly influences musical expression and interpretation. This study addresses the importance of transcending educational limitations to provide students with opportunities to encounter a broader array of musical traditions with a focus on pulse. We, as future music teachers, seek to explore how musicians from different genres and traditions conceptualize and engage with pulse and other temporal aspects within music. This exploration seeks to foster a broader comprehension that can inform future professional endeavors as music teachers and guide our and others pedagogical approach. Our objective as teachers is to equip students to engage in a wide range of musical genres and traditions and by that understand different aspects within the temporal organization of music. We also examine the constraints imposed by varying interpretations of rhythm within different musical contexts and genres, highlighting the significance of understanding these disparities for effective musical collaboration.

The term temporal organization of music will be used in this study as a collective concept encompassing musical phenomena defined by their placement within the dimension of time (Peretz & Zatorre, 2005). This includes elements such as pulse, rhythm, and meter, excluding auditory phenomena such as pitch, intervals, or harmony (Peretz & Zatorre, 2005). In the background chapter, a more in-depth explanation of what the temporal organization of music entails and refers to in the context of this text will be provided.

As this study targets both active and prospective educators in the field of music, we aspire to investigate the temporal organizations of music and how individuals actively engaged in music navigate and conceptualize this subject. Given the diverse interpretations of words, concepts, and phenomena within this domain, we recognize the necessity of gathering these perspectives to subsequently integrate them into an educational framework. Consequently, the study also examines how the upper secondary schools arts programmes curriculum addresses these subjects and how respondents retrospectively perceive their opportunities to fulfill these aspects.

When it comes to music education, teachers may grapple with the challenge of imparting a nuanced understanding of different aspects within the temporal organization of music that seeks to transcend the boundaries of specific traditions. A more comprehensive examination into how fundamental concepts such as pulse might be perceived and applied by musicians across diverse musical genres becomes essential for the foundation of this thesis. This effort aims to enrich students' musical experiences while equipping them to participate in collaborative musical contexts that have the potential to surpass conventional genre limitations.
In the context of the subject of music within the *Arts programme* at upper secondary school, the purpose is described as providing students with the following opportunities:

- Knowledge of music, concepts, and stylistic elements from different times and cultures.
- The ability to create and arrange music for one or more selected types of ensembles. (Skolverket, 2023)

A presentation of the Arts programme specialization in music on the website of Skolverket states that the student enrolled in the program will learn about music and how to make music with various influences and from different cultures (Skolverket, 2023). This implies that music teachers should provide students with the opportunity to explore a wide variety of different types of music. Given that the focus of this study is on *temporal organization of music*, the goal is to examine how different musicians conceptualize their relationship with aspects within this subject.

Aspects such as pulse can be conceptualized in various ways by different individuals and are inherently subjective, conceptualizations can also be shared by individuals who belong to the same community. Therefore, there is merit for music teachers to comprehend the foundations of these differences. This understanding can help when engaging with students from diverse musical backgrounds, allowing for the opportunity to broaden their exposure to various genres and traditions of music. The objective is to contribute to a body of knowledge that can benefit both future and practicing teachers, offering multiple ways to enable students to understand, appreciate and participate in differences within various musical traditions.
2. Background

In this chapter, the background of the study will be presented. This encompasses key concepts relevant to this thesis, the temporal organization of music, teachers, students and musicians. The chapter concludes with an overview of the study's problem area, its purpose, and research questions.

In our experiences as bass players, the bass often plays a crucial role in providing rhythm and percussive stability for an entire group of musicians performing together. Whether it involves playing an ostinato in Baroque music, walking bass lines in a jazz standard, sustaining the riff in a rock song, or a piece by Beethoven, the bass consistently assumes a foundational role.

2.1 Problem area

It is noteworthy that the temporal organization of music is deeply entrenched within different musical traditional contexts. While the concept plays a fundamental role within our text, it is crucial to underscore that these principles are not universally standardized. This diversity of perspectives may not only vary but also constitute a pivotal component in comprehending and navigating across diverse musical expressions. The variations in perceptions among musicians from different traditions and genres regarding the temporal organization of music can be a way to understand the diversity within certain musical traditions.

Although these aspects have contributed to our understanding of rhythm conceptualization, there seems to be a gap in the literature regarding the view of pulse conceptualization from musicians within the specific contexts of Western classical and jazz music. Previous research has primarily focused on rhythm perception (both theoretical and psychological standpoints) or explored pulse perception across different genres ([Parn cott, 1987; Duke, Geringer & Madsen, 1991; London, 2012; Levitin, Grahn & London, 2018; Gabrielson, 2020;]), leaving room for a more focused exploration within the realms of Western classical and jazz music. The study aims to address this lack of qualitative research by focusing on the specific examination of how musicians (in the case of this study, double bassist) in these genres articulate and interpret temporal organization of music. It seeks to spotlight the distinctive rhythmic nuances and stylistic elements they encounter. By comprehending these diverse traditions, the study intends to enhance communication between genres, encouraging cross-cultural dialogue and collaboration. This research endeavors to utilize the insights gathered to inform pedagogical strategies that encourage crossover communication between musicians trained in Western classical and Jazz, facilitating a shared understanding of pulse conceptualization and fostering collaborative musical exploration across genres.

If, in different musical traditions, the same concepts are discussed in varying ways, it could be helpful for students if their music teachers explain and elucidate these differences in an understandable manner. We as future music teachers want to equip our future students with the ability to engage with music that is unfamiliar to them and gain an understanding of musical traditions they may not have encountered before.
2.2 Purpose & research questions
The purpose of this study is to explore how double bassists from two distinct musical traditions conceptualize components within the temporal organization of music, specifically jazz music and Western classical music. The aim is to investigate potential differences and identify the factors that contribute to the emergence of these differences; this to give insights into possible pedagogical approaches to better meet students from diverse musical backgrounds. We intend to achieve the purpose by addressing the following research questions:

- How do four individuals from the double bass community within jazz and western classical music conceptualize components within the temporal organization of music?

- How do the conceptualization of different components within the temporal organization of music vary among the jazz and western classical music community?

2.3 Key concepts
As previously stated, the temporal organization of music is a comprehensive term encompassing musical aspects defined by time (Peretz & Zatorre, 2005). It can be perceived as involving two fundamental types of time relations: the segmentation of an ongoing sequence into temporal groups based on their durational values and the extraction of an underlying temporal regularity or beats (Peretz & Zatorre, 2005). In other words, the temporal organization of music includes aspects such as pulse, rhythm, and meter—elements that are time-based in music. This definition is not standardized but in the context of this thesis this is the definition we refer to. Throughout the remainder of this text, when the term temporal organization of music is utilized, it specifically refers to temporal phenomena, excluding considerations of pitch, harmony, and intervals. The concepts encompassed by the term temporal organization of music that are relevant to this study will be further explained in the literature overview chapter.

In the remainder of this thesis, we will make reference to teachers, students, and musicians. The following is an explanation of what these designations refers to in this paper:
Teachers: Music educators, including those who instruct in full classroom settings, but primarily emphasizing instructors who provide instrument-based lessons.

Students: This category encompasses individuals ranging from the primary school level, but the main focus of this study is directed towards students attending upper secondary school.

Musicians: Individuals who sustain their livelihood through engagement in musical pursuits, such as performing live or working as studio musicians. This designation pertains to artists who are fully dedicated to a career in music.
2.4 Disposition

The remaining sections of the thesis are structured as follows: First, a presentation of previous research, concepts within the field, excerpts from the curriculum for the arts program, and a section on teacher competence. Following this is an overview of the thesis's theory, succeeded by a chapter on the study's. The study's findings are then presented in a result chapter, concluding with a summary. Finally, a discussion chapter follows where the study's results and method are analyzed. This chapter also includes a section on the music pedagogical implications of the study and suggestions for further research.
3. Literature overview

In this chapter previous research within the field will be presented to provide an overarching understanding of the current state of research related to the subject and to identify areas that require further investigation. Following this, an overview of various concepts encompassed within the temporal organization of music will be provided. Subsequently, we will outline the requirements within the arts program in the Swedish upper secondary school and explore the concept of teacher competence.

3.1 Previous research

While the study focuses on the specific examination of how double bassists conceptualize aspects falling under our definition of the temporal organization of music, it remains crucial to incorporate previous research from the broader field. This encompasses a section on the ambiguity of musical pulse, perception of tempos, and how the temporal organization of music influences one's perception of the music being listened to. Following this, research related to pulse in musical contexts is presented, exploring how it can become shared through musicians' actions. Lastly, the concept of groove is discussed, examining how it manifests in music, primarily within the realm of jazz.

3.1.1 The ambiguity of pulse

In 2004, Moelants and McKinney conducted a study on tempo perception, focusing on "tempo ambiguity" and its impact on how we interpret the temporal aspects of music. Tempo ambiguity refers to the idea that the pulse can be perceived in multiple ways. The research presents factors influencing this phenomenon and explores the relationship between tempo and pulse. This research challenges the idea of an absolute tempo and explores how deviations from one's preferred tempo range introduce uncertainty into our perception of tempo (Moelants & McKinney, 2004).

Their investigation delved into the distribution of perceived tempi across diverse music styles, revealing how listeners' musical backgrounds and preferences influence their perception of tempo. These insights into the nuanced relationship between tempo perception and individual musical experiences contributed significantly to the field of music cognition.

Furthermore, Moelants and McKinney's research (2004) emphasized the interplay between musical structure, deviations from expected tempo, and the placement of accents, all of which can substantially affect how listeners experience music. This provides a deeper understanding of the dynamic and fluid nature of tempo in music, highlighting the importance of considering both structural elements and listeners' subjective experiences in the study of tempo and musical enjoyment (Moelants & McKinney, 2004).

Pulse emerges as a fundamental rhythmic element in musical experiences spanning various traditions and genres (London, 2012). It serves as a unifying rhythmic foundation for both musicians and audiences, akin to the rhythmic heartbeat of musical compositions (Gabrielsson, 2020). However, the multifaceted nature of pulse implies that it may be a complex and personal
phenomenon, with potential variations across different musical traditions and schools of thought (Butterfield, 2010). The importance of pulse perception within musical traditions goes beyond the realm of music itself (Bispham, 2006; London, 2012).

3.1.2 Pulse salience
A substantial body of research in the field, including the works of the previously mentioned Moleant and McKinney (2004), as well as Fitch and Rosenfeld (2007), who will be introduced later in this chapter, references Parncutt, who is an early contributor to the study of aspects within the temporal organization of music. Recent research tends to cite Parncutt's studies, indicating his enduring influence on the field. In 1987, Parncutt's research divided into pulse perception, with a primary focus on Western classical music. The study provided insights into identifying pulses within rhythmic sequences and introduced a method for predicting pulse salience based on event percepts. This method is anchored in the concept that even when certain rhythmic elements are absent, pulse perception can persist (Parncutt, 1987).

The algorithm predicts pulse salience through a "rule of thumb" that evaluates the relationships between pairs of event percepts stored in short-term memory (Parncutt, 1987). The salience of a pulse percept is directly linked to the number of equally salient event pairs corresponding to consecutive events within the pulse percept. This interconnectedness of events sheds light on the intricate dynamics of rhythm perception (Parncutt, 1987).

The concept of "short-term memory" or the "psychological present," which is crucial to pulse perception, operates within a few to several seconds. Pulse perceptions exceeding this duration fail to evoke a sense of pulse (Parncutt, 1987). The algorithm incorporates a bell-shaped weighting function centered around a 0.6-second pulse period, mirroring models used in pitch perception and accounting for factors like heartbeats and footsteps, thus enhancing our understanding of pulse perception (Parncutt, 1987).

To summarize, when individuals engage in musical collaboration, they synchronize with each other's tempo changes and perceive one another's pulse. If a musician in the room starts playing slightly faster, the other musicians can adapt to this alteration, this can even at times happen unconsciously, especially when the changes in the tempo is minor (Parncutt, 1987).

3.1.3 Pulse and groove
Building upon this foundational understanding, Butterfield (2010) delved into the complexities of pulse perception within jazz, challenging conventional assumptions. The research contradicted previous claims by demonstrating that timing discrepancies between bass and drums, even within the realm of expressive nuance, have a limited perceptual impact on most listeners (Butterfield, 2010). These experiments indicated that time discrepancies alone may not be the primary driving force behind the creation of swing, a captivating rhythmic quality in jazz music (Butterfield, 2010).
Butterfield's (2010) work unveiled that the interplay of timing, timbre, and musical attack might play a more significant role in pulse perception. Timbre and attack quality could be vital in generating the sensation of "push," shifting the focus from timing discrepancies alone (Butterfield, 2010). Furthermore, the study underscored the need for further research to explore the effects of timbre and attack on the perception of bass leads, as well as the intricacies of timing discrepancies in jazz.

Davies, Madison, Silva, & Gouyon (2013) expanded on this exploration by investigating the perceptual aspects of pulse and groove within various music traditions. Their study examined the role of systematic microtiming deviations in groove perception, challenging conventional wisdom. Their findings brought unexpected results, suggesting that while microtiming is crucial for expressive music performance, systematic deviations may not always enhance groove perception (Davies et al., 2013).

### 3.2 Concepts within the temporal organization of music

Earlier in the text, key concepts were introduced, among them the umbrella term *temporal organization of music*. In this passage, various musical concepts encompassed within the *temporal organization of music* will be discussed. Since music is inherently auditory, it can at times be challenging to precisely articulate musical concepts through words. Consequently, there may exist multiple approaches to defining them. As the *temporal organization of music* encompasses time-based aspects within music, the concept is quite extensive. However, not all time-based aspects within music will be relevant to this thesis; the concepts presented in this section are aspects that have emerged during the data collection phase of the study, thus, not all aspects within the *temporal organization of music* will be explained in this section. Below, we present explanations drawn from scholarly literature and research. The concepts that are introduced below are the following: *Pulse/tactus, tempo, meter, rhythm, time and swing*. However, it is important to note that this umbrella term, the *temporal organization of music*, may encompass additional aspects. The list below includes only those aspects relevant to the study and that will recur in the study's results.

**Pulse, beat and tactus**

*Pulse* is the rate of periodic events, known as *beats*, that listeners perceive as occurring at regular and equal intervals of time (London, 2012; Levitin, Grahn & London, 2018). Parncutt (1987) describes *pulse* as a simple sequence of equally-spaced event percepts.

In the book *Hearing in Time* London (2012) characterizes pulse as *tactus*. He asserts that *tactus* establishes the continuity in sounding music and contributes to making music measurable. According to London (2012) *tactus* provides a sense of anticipation regarding what follows in the music by indicating the *tempo*. Organizing rhythmic patterns necessitates a *tactus* (or a *pulse*), serving as a framework for comprehending music and all its constituent elements (London, 2012). Essentially, it can provide a structural foundation for understanding music and its intricate components. Perceiving pulse is a subjective experience, and, as such, it can be regarded as personal and inherently subjective. It defies categorization as "right" or "wrong"

In the absence of a shared common pulse among ensemble instruments, discord would likely ensue, leading to disparate tempos and disjointed musical passages within the same composition (Fitch & Rosenfeld 2007). This concept can be likened to an essential thread interwoven within the fabric of music, manifesting as a rhythmic tapestry of pauses and beats. It’s akin to the uncanny ability to anticipate the arrival of the next beat in a musical piece, creating a sense of temporal continuity (Fitch & Rosenfeld 2007). The pulse can also be shared among musicians who play together (Parncutt, 1987). They adjust to each other, listen, and "align" themselves in the musical context within the framework of the piece they are performing (Parncutt, 1987).

**Tempo**

In a wide-ranging context, tempo encompasses the speed or rhythm at which events occur in the surroundings (London, 2012). Whether something is happening quickly or slowly, tempo encapsulates this event rate. One could say that tempo signifies the tempo or speed of a musical piece, indicating how fast or slow it is (London, 2012). Drawing upon the works of London (2012), tempo refers to what pace and tactus refers to the pace.

In musical notation, the intended tempo is often expressed in terms of beats per minute (e.g., bpm), offering a specific measurement of the pace (McAuley, 2010). Researchers studying musical tempo commonly utilize this beats-per-minute convention. However, it’s worth noting that tempo can also be articulated in the literature as the time interval between successive beats, known as the beat period. This alternative convention has proven valuable as it allows for a more direct comparison with the broader body of research on time perception (McAuley, 2010).

According to Jansson (2007), there are multiple terms in the realm of classical music to define a tempo or pace. Positioned to the right within the column underneath, one may discern the targeted tempos corresponding to these diverse notational conventions. This practice served to articulate nuanced facets of musical expression, thus facilitating a comprehensive understanding of the intricate interplay between the compositional elements and the intended affective resonances conveyed within the music (Jansson, 2007). The most common ones are the following:

- **Grave** – slow and solemn (20–40 BPM)
- **Lento** – slowly (40–45 BPM)
- **Largo** – broadly (45–50 BPM)
- **Adagio** – slow and stately (literally, “at ease”) (55–65 BPM)
- **Adagietto** – rather slow (65–69 BPM)
- **Andante** – at a walking pace (73–77 BPM)
- **Moderato** – moderately (86–97 BPM)
- **Allegretto** – moderately fast (98–109 BPM)
- **Allegro** – fast, quickly and bright (109–132 BPM)
- **Vivace** – lively and fast (132–140 BPM)
- **Presto** – extremely fast (168–177 BPM)
- **Prestissimo** – even faster than Presto (178 BPM and over)

These terms were employed to target the characterization of musical compositions, discerning the prevailing emotional ambiances therein, instead of a consistent rhythmic cadence. They also mostly appear in the western classical tradition (Jansson 2007).

The literature on pulse perception and rhythm cognition provides valuable insights into various aspects of musical timing and perception. Studies by London (2012) have contributed to a theory of musical meter and investigated the perception and interpretation of rhythmic patterns. Desain and Honing (2003) have explored resonance and the perception of musical meter, emphasizing how factors such as harmonic structure and melodic contour can influence pulse perception. Friberg and Sundström (2002) have redefined the concept of "groove" and examined accent patterns in jazz music. Madison (2001) has studied tempo perception and how musical content can affect the perception of a piece's speed. London, Polak & Jocoby (2016) have investigated pulse perception in musical rhythm and how it can be influenced by factors such as acoustic structure and melodic phrases.

**Meter**
London (2012) describes that meter in music refers to the systematic organization of time within a musical composition. Meter addresses the beats themselves, not the tactus or tempo directly. However, without tactus, there is no meter, as the meter relies on its beats (London, 2012).

It establishes a rhythmic framework by dividing musical time into regular, recurring beats or pulses (London, 2012). This concept can be useful when understanding the rhythmic structure of a piece of music. In the realm of sound, one is constantly in search of recurring meters, continuously seeking patterns within the auditory landscape (London, 2012). "So to return to the question, what is meter for? One can say that metric entertainment allows listeners to
synchronize their perception and cognition with musical rhythms as they occur in time" (London, 2012, p. 5).

*Meter* also pertains to how various rhythmic patterns involve accented and unaccented *beats*. *Meter* is what allows us to perceive patterns and a hierarchy between *beats* within a musical phrase (London, 2012). In this context, the work by Levitin et al. (2018), serves as a guiding beacon. Their explanation with the familiar song *Happy Birthday* exemplifies this, transforming into a rhythmic journey that accentuates the ebb and flow of musical time.

As can be observed above, the excerpt consists of three *beats* per measure, but not all note values are emphasized equally. Some carry more *weight*, in this case, the part of the phrase that aligns with the first beat in each measure (Levitin et al., 2018). The hierarchy between the accented and unaccented beats is a crucial aspect of identifying what *meter* entails.

To address the question of the purpose of *meter* in music, it can be argued that *meter* serves as a tool for enabling listeners to align their perception and cognitive processes with the unfolding musical rhythms in real time (London, 2012). With insights from London (2012) one could perceive that *meter* is primarily rooted in the perception and execution of a *pulse* or *tactus*. The *tactus* serves as the foundational element for maintaining the continuous flow of musical motion; without it, any notion of *meter* would be devoid of meaning. However, it is important to note that a *tactus*, on its own, does not fully encompass the concept of *meter* though it contributes to making music measurable and gives it a broad frame (London, 2012).

*Rhythm*

Rather than adhering to strict regularity, *rhythm* comprises a sequence of intricate acoustic events with a distinct temporal structure (London, 2012). Musical *rhythms* can be richly complex, defying straightforward repetitive patterns. They encompass variations in timing, tempo fluctuations, syncopation, and intricate patterns (London, 2012). Additionally, these musical rhythms can exhibit long-term changes and patterns akin to those observed in biological and psychological time series (Large & Snyder, 2009).

If we shift the focus to music psychology, Gabrielsson (2020) states that the term *rhythm* derives from the Greek word *Rhythmos*, which is associated with rheo=flow, orderly motion. He also notes that *rhythm* is not only used in music, but also in other art forms, such as the *rhythm* of a drama, as well as in non-artistic contexts, such as the circadian *rhythm*, the seasonal *rhythm*, and the cardiac *rhythm*. The multifaceted nature of this concept makes it, according to Gabrielsson, difficult to provide a clear definition of *rhythm*, and even within the domain of music, there is no consensus on what constitutes *rhythm*. Although there is an intuitive understanding of the phenomenon, a universally accepted definition has yet to be established (Gabrielsson, 2020).
Drawing upon the work of Gabrielsson (2020), rhythm can be portrayed as a dynamic and intricate framework underpinning musical experiences, transcends the confines of mere notes, defining the timing of note onsets akin to scaffolding for compositions. According to Levitin, Grahn and London (2018) this intrinsic quality of rhythm, far from being an abstract construct, resonates deeply within us, forging a harmonious connection with our physical bodies and emotions. In the realm of music, rhythm assumes the role of a universal language, fostering connections among diverse cultures and individuals. It breathes vibrancy into compositions and binds us intrinsically to the rhythm of life (Levitin et al., 2018).

In the context of music, particularly as illuminated by McAuley's work in Tempo & Rhythm (2010), rhythm takes on a multifaceted role that extends beyond sound patterns. It encompasses the meticulous arrangement of durations within musical events and our sophisticated perception of their temporal organization of music. This encompasses essential elements such as grouping, beat, and meter, all of which intricately mold our cognitive and emotional engagement with the captivating world of rhythm (McAuley, 2010).

Time and swing

In Western classical music, almost exclusively Italian terms are used (Jansson, 2007). In the jazz tradition, however, English is the dominant language, given that jazz largely developed in the United States (Strandberg, 1999). Being able to maintain tempo and play rhythmically accurately is often referred to as "having good time," which can be interpreted as having perfect timing, akin to a metronome or a programmed beat (Strandberg, 1999). However, having perfect time doesn't necessarily mean that the music swings, especially since this is a subjective opinion (Strandberg, 1999). Therefore, timing typically refers to musicians playing in tempo, including both the ability to maintain a steady tempo and execute tempo changes smoothly (Strandberg, 1999). Strandberg (1999) suggests that pulse is something that constantly continues, and a prerequisite for having good timing is to be relaxed and not strained while playing. He also contends that musical swing, and groove, is not the same as musicians playing in time, as swing has a more embodied aspect closely related to dance and movement. This doesn't necessarily mean that musicians physically move and dance but rather that it is manifested through playing their instruments. It's the notes that dance, not necessarily the body (Strandberg, 1999).

Now, previous research and aspects of the temporal organizations of music have been presented. All these aspects are crucial elements within music. These are things encountered by anyone that plays music, regardless of their level of expertise. Given the diverse interpretations of these concepts in research (Gabrielsson, 2020; Large & Snyder, 2009; London, 2012), how should we consider them in music education? Taking the different approaches to musical concepts in the field of music research into account, are there also differing approaches within various musical traditions towards these concepts? When students encounter music from various musical traditions, we believe that this is something to consider. In order to gain a clearer understanding of what is expected of music teachers, specifically concerning students' encounters with different types of music, it is necessary to examine how these aspects are described in the curriculum provided by Skolverket.
3.3 Curriculum
In this section, excerpts from the curriculum of the arts program in upper secondary school are presented. This is done to later engage in a discussion about how they align with the *temporal organization of music* and the findings of this study. The curriculum concerning music not only addresses the individual student's solo proficiency on their instrument but also encompasses ensemble playing (Skolverket, 2023). Ensemble involves students playing together in various constellations, and when playing together, there are crucial aspects to consider. Maintaining a common pulse while making music with others is of great importance, as an ensemble not sharing the same pulse would likely be in different places within a piece and not in unison (Fitch & Rosenfeld, 2007). Since the curriculum includes requirements for ensemble playing, aspects such as pulse become something that the arts program needs to address with its students.

In the context of the subject of music within the *Arts programme* at upper secondary school in Sweden, two of the purposes are described as providing students with the following opportunities:

- Knowledge of music, concepts, and stylistic elements from different times and cultures.
- The ability to create and arrange music for one or more selected types of ensembles.

(Skolverket, 2023)

Within the educational objectives of the arts program, it is emphasized that the education should provide students with comprehensive training in the artistic craft (Skolverket, 2023). In this context, "craft" refers to various artistic expressions, including music, both as a group activity and the ability to play musical instruments (Skolverket, 2023). More specifically, concerning the subject of music, the program's purpose is to offer students opportunities to explore different methods of studying music and to practice music from various periods, cultures, and styles (Skolverket, 2023). This is done to promote a broadening of musical genres (Skolverket, 2023). Delving further into the objectives and content of the programs, we can look at the course *Instrument or Voice 1 (or 2)*, which states that students should become acquainted with fundamental repertoire for their respective instruments (Skolverket, 2023). Throughout the program's objectives and goals, there is a consistent emphasis on students engaging with diverse materials and music, enabling them to explore a wide range of genres and encounter various stylistic elements and ways of using their instruments (Skolverket, 2023).

3.4 The competence of teachers
As individuals within different musical traditions may conceptualize aspects within the *temporal organization of music* differently, it may be in the interest of music teachers to gain insights into these variations. This understanding could be helpful when providing students with diverse entry points in their encounters with musical traditions that may be unfamiliar to them. To further explore the dynamics between teachers and students, the text will now elucidate how these relationships may operate. It becomes significant to comprehend the role of music teachers in the students' development and acquisition of skills on musical instruments. Even if they primarily align with a specific tradition, is there a need for knowledge spanning
various musical traditions? Understanding these nuances across traditions can be advantageous, as it allows music teachers to offer diverse pathways for students, especially in navigating unfamiliar musical territories.

Davidson, Howe and Sloboda (1997) highlights the significant role of students' initial instrument teachers in shaping their genuine interest in the instrument and music as an art form. Many students express that their first teachers were influential figures in their musical craftsmanship and the desire to learn more. The teacher's character also holds paramount importance in students' musical development (Davidson et al., 1997). Younger students in early primary school emphasized that their teacher should be kind and warm, while older students with more experience on their instrument similarly valued these traits but also considered professionalism and competence on the instrument as among the most crucial qualities in their instrument teacher (Davidson et al., 1997). Olsson (1997) posits that it is possible to influence and shape individuals' musical preferences and tastes, although not all attempts are successful. Numerous factors influence young students' musical preferences, such as age, gender identity, and socio-cultural background. These preferences are also shaped by their friends and the social groups to which they belong (Olsson, 1997). This suggests that the students may not always have the opportunity to encounter various musical traditions and genres when it comes to music in general and therefore also music related to their specific instruments. Therefore, it becomes crucial for the teacher to step in and provide opportunities to explore more musical realms (Olsson, 1997).

When it comes to post-secondary level music education, attitudes and norms are based on the relationships between teachers, as well as between teachers and students (Olsson, 1997). Social influence is constituted by informal and implicit rules, which in some instances can exert a more potent influence on behaviors and the social environment than formal regulations. In the context of student learning processes and goal setting, norms and values within a social context are profoundly influential factors (Olsson, 1997). Teachers and students collectively shape the social environment, its norms, and prevailing values. Likewise, students' goals and learning are similarly influenced by these factors (Olsson, 1997).

Drawing upon the works of Davidson et al. (1997) and Olsson (1997), teachers' relationships with students have a significant impact on students' ability to learn. This manifests in various ways with students of different ages and educational levels, but it consistently remains a cornerstone in fostering learning among those seeking knowledge
4. Theory overview

As previously mentioned in the text, there are divergent interpretations regarding aspects of the *temporal organization of music*, for example within the realm of research. To comprehend the reasons behind varying interpretations among individuals, it is essential to demonstrate their affiliation with distinct communities, elucidate the functioning of these groups, and expound upon the sharing of knowledge within them. The ability to define distinct communities and understand their perspectives on various facets of *temporal organization of music* will facilitate the categorization of these diverse interpretations. This, in turn, can provide insights into the origins of the disparate comprehensions and conceptualizations.

The concept of *Community of Practice*, or *CoP* for short, was introduced in the late 1990s by Lave and Wenger. This concept pertains to groups of individuals who share common interests, areas of expertise and pastime activities, coming together to interact and/or collaborate within a specific domain. These groups can be found in various environments and contexts, including professional settings, academic fields, workplaces, and online forums (Wenger, 1998). Within these environments, individuals convene to share and develop knowledge within their areas of interest, essentially these are groups that foster learning and the sharing of knowledge (Wenger, 1998).

By establishing that musicians can be part of various communities, one can create a framework that clarifies how these different groups and individuals perceive music and its phenomena (Wenger, 1998). Do individuals within the same group discuss a phenomenon in the same way? Do they share the same relationship with musical phenomena? With the assistance of Communities of Practice (CoP), it is also possible to ascertain how knowledge is disseminated, who shares it, and what knowledge is valued within a specific community of individuals (Wenger, 1998). Using these groups as a starting point can provide insights into how different musical phenomena are taught and whether this leads individuals from various musical communities to have similar or distinct views of fundamental musical concepts, for example.

If an individual has been part of a specific community within the music world for an extended period, one can also examine how the duration of involvement has influenced the individual's approach to various concepts (Wenger, 1998). By being able to identify different groups, there is an opportunity to study experiences related to different phenomena from within, thereby exploring how communities can influence how individuals perceive their surroundings, how they act within them, and the knowledge they have the potential to acquire (Wenger, 1998).

CoP is based on three dimensions that are essential for participation in a Community of Practice, which are listed and described below:

- **Mutual Engagement**
  Participation in shared actions or activities. This entails that individuals within the community share a common commitment, as they have voluntarily chosen to participate in the specific activity or group, not due to external circumstances.
- **Joint Enterprise**
  Shared goals or objectives. This also means being engaged in a process with the intention of collectively accomplishing something. It also involves agreements, norms, expectations for individuals within the community, and progress towards goals and outcomes.

- **Shared Repertoire**
  Established routines and resources. The shared repertoire encompasses vocabulary, terms, and concepts utilized within the community, along with routines that have evolved from a shared history. In a musical context, this may also pertain to stylistic elements, genre preferences, the materials used, and so forth.

Zadig (2017) employs the Communities of Practice as a theoretical framework in their dissertation focused on choral singing. They analyze the choir as a community and observe the presence of informal leaders within the choir, some of whom may not even be aware of their leadership roles. This is achieved by examining the group's shared goals, projects, commitments, as well as their common repertoire, choir history, working methods, and social interactions. With the help of the CoP theoretical framework, the study delves into the social aspects of the choir, including factors such as engagement, artistic ambitions, and leadership roles within the choral context (Zadig, 2017).

One crucial aspect for this study is to investigate how individuals in these communities share knowledge and develop within their craft. Through the three essential dimensions of the Community of Practice, we believe it is of utmost importance to imbue this perspective with an educational foundation. In our case, we will refer to this as **participant trajectory**, a way to examine individuals within communities, identify the different levels they are at, and observe how they can develop within their artistry with the support of their context.

In conclusion, CoP is a framework for understanding how individuals with shared interest and goals come together and learn, interact and collaborate within specific domains (Wenger, 1998). It also helps highlight specific terms and vocabulary used in these communities. Additionally it can also shed light on stylistic choices, not limited to but in this specific case related to communities who engage in music. In this study, the Community of Practice (CoP) will be employed as an analytical tool.
5. Method

This chapter will outline the design and methodology of the study. Initially, it will explicate the concept of semi-structured interviews, elucidating its meaning and detailing its application within the context of this particular study – specifically, how empirical data was collected. This section will also introduce the framework guiding the study's interviews, including the overarching themes that categorize the interviews into three main segments. Following this, the chapter will provide an overview of the respondent selection process, detailing the methodology employed and addressing ethical considerations inherent in this procedure. Subsequently, the chapter will delve into an exposition of the ethical considerations guiding the study. Finally, a comprehensive examination will be conducted on how the theory of Communities of Practice is employed to analyze the empirical data gathered in the study, thereby concluding the chapter.

This study adopts a qualitative research approach. Qualitative research is characterized by its objective to explore how individuals perceive and interpret their surroundings and the broader world (Bell & Waters, 2016; Creswell, 2018). In this type of research, the focus lies predominantly on understanding the world through words and not numbers, as opposed to, for example, empirical studies within the natural sciences where data can be systematically quantified and expressed in numerical form (Bell & Waters, 2016; Creswell, 2018). In qualitative research, the empirical evidence is often better understood through the exploration of nuanced perspectives and qualitative data collection methods (Bryman, 2008).

5.1 Semi Structured interviews and data collection

Semi-structured interviews offer a versatile approach to data collection that strikes a balance between highly structured and unstructured interviews (Bell & Waters, 2016). They provide a foundational framework with predefined questions while allowing for adaptability. This flexibility is essential as it empowers us as interviewers to probe intriguing responses, explore unexpected avenues, and tailor the interview to the interviewee's unique context (Creswell, 2018). Consequently, this adaptability can yield comprehensive and enriching data (Bell & Waters, 2016).

Moreover, semi-structured interviews excel in facilitating in-depth insights, particularly for investigating intricate and nuanced subjects (Bell & Waters, 2016). Participants are encouraged to articulate their thoughts in their own words, sharing their experiences, perceptions, and emotions. This qualitative approach is well-suited for delving deeply into the research topic, fostering a holistic understanding, and capturing the subtleties of participants' perspectives (Creswell, 2018).

By affording participants the freedom to express themselves and share their personal stories, researchers gain valuable insights into their worldviews, values, and life experiences (Creswell, 2018). This participant-centered methodology proves especially beneficial when investigating subjective themes like personal experiences, beliefs, or emotions (Creswell, 2018). In the context of the study’s research subject, we find a robust rationale for the utilization of semi-structured interviews. This choice is underpinned by the aim to unearth a diverse array of nuances, perspectives, and viewpoints from our interview participants. In doing so, we
acknowledge the necessity of adaptability in formulating interview questions and follow-up inquiries.

After the initial draft of the interview questions had been formulated, a pilot interview was conducted. Both authors participated, with one posing the questions and engaging in a dialogue with the respondent, while the other took notes and contemplated potential improvements to the questions and the overall structure. After a pilot interview, the questions were further revised. The revision process involved the removal of some questions due to their close resemblance to others. Additionally, we decided not to provide a pre-, during, or post-interview definition of the term “pulse” to the respondents, aiming to avoid influencing their responses and reasoning. This decision was made following a discussion with the respondent from the pilot interview. Following these revisions we were prepared to conduct interviews with the respondents. The questions in the interview template served as broader headings (the questions can be read on pages 20-21 but are also available in the appendix), and during the interviews, follow-up questions were asked, which were more spontaneous and related to the context that the respondents naturally delved into through their responses. Respondents were encouraged to expand on their reasoning and experiences through these follow-up questions, and the interviews resembled more of conversations during these stages. This was achieved by posing follow-up questions about their initial answers and encouraging respondents to delve deeper into their experiences and thoughts. At times, they were prompted to describe specific terms they had used, providing a more nuanced understanding of their meanings and thoughts.

The study addresses temporal organizations of music, with a significant focus on pulse. During the interviews, the respondents were encouraged to freely associate and express their conceptualizations of what pulse entails. As the interviewers, we refrained from providing any pre-, during, or post-interview definitions of pulse or its treatment in the study. It is worth noting that even questions lacking explicit terms related to the temporal organization of music led respondents to discuss topics categorized as such in the study. The interviews commence with inquiries pertaining to temporal structures in music, prompting respondents to engage in discussions related to this theme, even when the questions themselves did not overtly concern this subject. The initial intention was not for this to happen, but after the pilot interview, it became evident that since the interview commenced with questions related to the temporal organization of music, respondents continued to reason with this in mind when responding to questions that were not as explicitly connected to this topic. Upon recognizing this pattern, it was decided that this interview format was preferable.

Given the semi-structured nature of the interviews, it allowed for a gentle redirection of the conversation towards the relevant aspects concerning how communities operate and what distinguishes respondents' specific communities and affiliations within the world of music and specifically temporal organizations of music. The questions delved into not only the concepts, terminology, and their definitions but also the goals, norms, and ideals held and followed by the respondents. Furthermore, respondents were asked about their perspectives of how other communities functioned, providing insights into their views of their own world and where they positioned themselves within it.

The interviews were constructed based on three overarching themes: temporal organization of music, musical identity and tradition, and skill acquisition in music education. Below is a listing of these themes, an elucidation of their role in the interview, and the questions under each category. The following text does not include any follow-up questions as those were based on
the respondents' answers to the questions, their thoughts during the interview, and how they chose to interpret the terms used. We have chosen to structure the text in this way because during the interviews, we also had only the following questions in front of us. As previously mentioned, the interviews were more like conversations, and the questions served as conversation starters. As each interview was unique, there are no predetermined follow-up questions that were written down beforehand.

5.1.1 Temporal organization of music

These questions explore the concept of pulse in music, examining its dynamic and static aspects, the respondents' connections to pulse and variations within different musical traditions and genres. The inquiry also delves into the role of pulse in musical education and examines potential differences in its discussion across various music programs and genre orientations. Additionally, the exploration extends to how musical terms like pulse, rhythm, and tempo are approached in diverse music education settings.

As both we, the authors, and the respondents have Swedish as our native language, the interviews were conducted in Swedish. The questions below are English translations of the questions that were originally written in Swedish, the questions can be read in their original language in the appendix.

- How would you describe pulse as a musical concept?
- How would you describe your relationship to the phenomenon of pulse?
- Are there variations in pulse or rhythm within different musical traditions and genres? Why? Why not? How?
- Are there variations in the nature and expression of pulse within different music traditions? Describe these. In what ways? Why do you think that is the case?
- How has the concept of pulse affected or played a role in your musical education? Why/Why not? In what way?
- Is there a discussion of pulse and related phenomena in different ways in various music education programs with different genre orientations?
- Do you think that musical terms (such as pulse, rhythm, tempo) are approached differently in various music education programs and specializations? How? In what ways?

5.1.2 Musical identity and tradition

In this subheading, we focus on musical identity, tradition, the influences of traditions, performing in unfamiliar traditions or genres, and musical challenges with pulse as the starting point.

- In your musical identity, do you identify more within a specific musical tradition?
- Can you share examples that illustrate how these traditions have influenced your musical performance?
- How do you approach music in genres/traditions that are unfamiliar to you?
5.1.3 Skill Acquisition in Music Education

Under this subheading, we are focusing on music education. By querying the informants about their educational background in music, one could gain an understanding of how their experiences and schooling have shaped their thoughts and encounters regarding *temporal organization of music* in their chosen tradition. During this part of the interviews the informants were handed an extract from the curriculum of the upper secondary school’s art program. The two first questions under this subheading were based on these extracts (these extracts are presented above under the heading Curriculum).

- In what ways did you gain knowledge of musical concepts from different times and cultures during your years in upper secondary school?
- In what ways were you assisted in developing the ability to create and arrange music for various ensemble types?
- Is there anything important within the subject of pulse in the context of musical traditions/genre diversity that you believe we have overlooked?

5.2 Participants

The study involved four interviews with individuals who are currently studying or have studied at the Royal College of Music in Stockholm. Two of the respondents are/were enrolled in the jazz musician bachelor's program, while the other two are/were in the classical musician bachelor's program. All four respondents have the double bass as their primary instrument. All interviews were conducted during the same week, spanning from week 40 to week 41, 2023. The interview durations ranged from 35 minutes to 1 hour and were conducted both in-person in a classroom at the Royal College of Music in Stockholm and via the online meeting platform Zoom. Throughout all interviews, both authors were present. One author conducted the interview, while the other sat alongside, taking notes and interjecting with additional follow-up questions. As previously mentioned, the interviews were conducted in Swedish.

As the study needed to be conducted within a limited timeframe, it was essential to quickly identify suitable respondents to gather relevant empirical data. Therefore, a purposive sampling approach was employed. Purposive sampling is primarily utilized in qualitative research and involves selecting a specific unit, which can be individuals, organizations, departments, or similar entities (Bryman, 2008). This specific unit is directly relevant to the research question or questions (Bryman, 2008). In order to rapidly reach respondents who could contribute to the empirical data, individuals known to the authors who were currently studying or had studied one of the bachelor's programs of interest in the study were contacted. Respondents sharing the same primary instrument were selected as they inherently had many similarities, making the differences more interesting to examine. This approach allowed for a more transparent
exploration of variations between different musical traditions. Additionally we reached out to the double bass teacher at the Royal College of Music in Stockholm to obtain contact information for additional double bassists meeting the criteria for suitable respondents. This method could be described as a convenience sampling (Bryman, 2008), chosen due to the importance of considerations regarding accessibility and time constraints in the execution of the study. Furthermore, we would appreciate it if this study could serve as a stepping stone for future research in the field, without the same temporal constraints. Given that the study exclusively focuses on double bassists studying or having studied a specific program, it was most convenient to contact students or former students who were studying in close proximity to us, which led to the Royal College of Music in Stockholm.

The amount of empirical data collected during the pilot interview laid the foundation for considerations regarding the number of respondents needed for the study. By examining what was relevant to address the research questions of the study, the number of four interviews was chosen for the study's methodology. Given the qualitative nature of the study with a focus on exploring different perspectives and experiences, we preferred to conduct longer and more in-depth interviews with fewer respondents rather than more brief interviews with a larger number. The selection of four respondents was based on the study's examination of two distinct communities, with the aim of having two representatives from each community.

The reason for the study's focus on students is that these individuals are engaged in music on a full-time basis. Respondents who had completed their studies were also working full-time in the field of music, spending a significant portion of their time in musical contexts and environments. The aim of the study is to highlight various perspectives on the temporal organization of music and the variability of the subject within different musical traditions. Therefore, respondents who are fully immersed in music and share similar experiences due to their studies or previous studies at the same school and similar bachelor's programs were chosen. While this information can certainly provide insights into the institution they are studying/studied at, what is pertinent to this study is how these individuals conceptualize the temporal organization of music and how their conceptualization has been or is being shaped by the musical tradition they perceive themselves to be a part of.

Both the Jazz and Classical Music bachelor's programs are three years in duration. As the number of students in the bachelor's programs can vary from year to year, the program directors were contacted to determine the average number of students enrolled in each program. In both bachelor's programs, the following enrollments are observed:

**Jazz** - 24 students are admitted each year, including four bassists (one of whom is an electric bassist). According to Håkan Goohde, program director of the Jazz Institution, Royal College of Music Stockholm (personal communication, 10 October 2023).

**Classical** - 25 students are admitted each year, including one contrabassist. According to Karin Hjertzell, program director of the Classical Institution, Royal College of Music Stockholm (personal communication, 10 October 2023).
As some students choose to drop out or take gap years, the number of students decreases for each academic year, according to both program directors. Therefore, it is not possible to definitively state the exact number of double bassists studying in the school's bachelor's programs simultaneously.

In the context of anonymity, this is relevant information. An argument can be made that the respondents could be identified solely by the fact that they are enrolled in one of the programs, thereby compromising their anonymity. This concern has been mitigated by the fact that two of the respondents in the study are no longer enrolled at the Royal College of Music in Stockholm. The jazz institution, as demonstrated above, has approximately 9 double-bass players enrolled in the bachelor's program at any given time. This study includes two respondents from the program, one of whom has graduated. Similar to the respondents in the classical bachelor's program, this helps to safeguard the anonymity of the respondents.

5.3 Ethics
Given that the primary objective of this study was to investigate human perspectives, strict adherence to ethical guidelines was paramount to ensure the protection of respondents' rights. This study adhered to guidelines outlined in a 2017 publication by Vetenskapsrådet. The fundamental purpose of research is to enhance humanity's comprehension of the world and its inhabitants. Research must not infringe upon the rights of individuals and should accurately reflect reality. Moreover, research should safeguard the integrity of participants and, therefore, be anonymized, de-identified, and held in strict confidence (Vetenskapsrådet, 2017).

Effort has been taken to ensure that respondents cannot be identified from the information presented, particularly in the results chapter. In this study, respondents were accordingly identified using numerical identifiers during both data collection and the subsequent analysis process. Pseudonyms were assigned in the presentation of results to maintain anonymity. Given that respondents shared personal experiences, there is a risk of identification. Therefore, in the results section, we have chosen not to include names of locations and/or specific teachers or other individuals that the respondents may have mentioned. In other words, details that could be linked to the individual respondents were omitted. Additionally, only the authors of the study had access to the data recorded under the interviews. Prior to their participation in this study, respondents were required to provide informed consent by signing a consent (see appendix) form (Creswell, 2018; Bell & Waters, 2016). The consent form includes a section stating that the respondents will remain anonymous in the study and that they have the right to withdraw and exit the study at any time.

5.4 Analysis
The study's data will be analyzed deductively using the Communities of Practice theory, in short CoP, developed by Lave & Wenger (1998). CoP theory, emphasizing learning within social contexts, is particularly relevant in pedagogical research, offering insights into how musicians learn and understand, in our case temporal organizations of music. By employing CoP as an analytical tool, this study aims to elucidate how learning occurs within specific social
groups, such as jazz and classical double bassist communities. The focus of this analysis will specifically examine the practices and shared knowledge within these communities. CoP's focus on shared learning, norms, and practices allows for an exploration of how knowledge of **temporal organization of music** is transmitted and internalized within these communities. Furthermore, CoP aids in identifying relevant groups within the music domain, enabling a nuanced examination of how pedagogical practices regarding **temporal organizations of music** are shaped within jazz and classical double bassist communities, which again is the main purpose of this study. This analytical framework provides a pathway to comprehend the learning processes involved in the acquisition and application of knowledge related to **temporal organizations of music** among musicians, thereby enriching our understanding of pedagogy within these specific musical settings. Below is a summation of how to analyze data using CoP:

1. The first step when employing CoP as an analytical tool is to identify the various communities relevant to the study. These could include professional groups, organizations, or individuals with shared interests. In the case of this study, the groups are musicians who self-identify within a specific musical tradition.
2. The second step is to gather relevant data within the group(s). In this study, as previously mentioned, data has been collected through semi-structured interviews engaging representatives from two different groups.
3. Once the data is collected, it is analyzed through CoP's three essential dimensions (as mentioned in the previous chapter addressing CoP): **Mutual Engagement**, **Joint Enterprise**, and **Shared Repertoire**. This entails examining how group members talk about, and describe their shared goals or objectives, the resources and routines they employ, as well as the practices and norms existing within the group.
4. Identify key individuals within the practice. How do these individuals engage within the group to achieve their goals? How do they impact the group's knowledge sharing and learning? To whom do they refer when addressing topics related to pulse and metrics.
5. Examine how individuals progress from novices to experts through their participation within the group. How does knowledge flow within the group? What significant terms are used by novices and experts respectively regarding **temporal organization of music**?
6. Identify factors that influence knowledge sharing within the group, including aspects that hinder or facilitate learning. Also, consider leadership and group norms in relation to these factors. What norms do they observe in terms of sharing knowledge and working with others, and do these norms entail obstacles for them as individuals? How do the respondents describe how their teachers and other individuals within their community talk about the **temporal organization of music**?
7. Search for patterns and trends within the data related to the community. This can be both explicit and implicit. Scrutinize the empirical data carefully and be vigilant about trends, norms, and opinions. What words do the respondents use? What vocabulary do they employ in relation to the **temporal organization of music**? Can patterns be identified in these expressions?
8. Summarize the results and conclusions.

(Wenger, 1998)
6. Results

In this chapter, we will present the collected empirical data from the semi-structured interviews with the study's participants. The chapter is divided into four headings in total: mutual engagement, joint enterprise, and shared repertoire, which are the three essential dimensions of a Community of Practice, the theory used for analyzing the empirical data. Under these headings, there are further subdivisions that organize the empirical data into more specific components. The fourth and concluding chapter is a summary of the whole result chapter.

Through the lens of the Community of Practice, we have mapped three distinct communities into which we have classified the respondents based on their content, and characteristics from the data collected from the interviews. Another classification for the communities was also the bachelor's program they are currently studying or have studied. Here, we will elaborate on what they encompass and how they manifest within this context, as the results are based on them. The first community we have examined includes all respondents; They share the same primary instrument, they are all double bassists. This can be considered as a community that they are part of, the double bass community. However, they have pursued different programs, with two of them completing the bachelor's program in jazz music, while the other two have completed the bachelor's program in classical music. These distinctions have allowed us to identify two additional communities from the empirical data.

Here is a breakdown of all respondents and the tradition they identify with:
Jazz tradition: Charlie and Aaron
Classical tradition: Kim and Franz

6.1 Mutual engagement

Within this community, mutual engagement takes on a multifaceted essence. It not only encapsulates their collective commitment to the double bass but also encompasses collaborative efforts and reciprocal support. Drawing upon the information gathered from the interviews, their roles as double bassists are not solitary endeavors but rather intricately interwoven with the musical endeavors of their fellow musicians. Whether nestled within the harmonies of a jazz quartet or seamlessly integrated into the symphony of a classical ensemble, they serve as the foundational pillars that bolster and harmonize the collective musical expression of the entire group, a mutual engagement.

This section delves into the mutual engagement of the respondents within the double bass community, where their collective dedication to the instrument serves as the foundation. The roles of double bassists within their various musical contexts are also explored. After this the influence of music teachers, a key individual within the communities, is explored, with emphasis on the challenges and benefits of varied teaching approaches, affecting the respondents' participant trajectories in temporal organization of music. The role of a double bassist is not isolated but interconnected with the musical endeavors of instrumentalists. They serve as the backbone for other musicians, whether it's in a jazz quartet or a classical ensemble.
6.1.1 The role of the bassist and collaborations

According to our respondents based in the jazz tradition, the bassists serve as the rhythmic metronomes of the ensemble, most notably by often creating walking bass lines. Walking entails a rhythmic pattern where the bassist plays on every beat in the measure, and the tonal content is typically guided by the harmonies played by the chord instruments. Since the bassist plays on every beat, it essentially functions as a metronome, something that the remaining musicians adhere to in their timing. This role unifies the group and encourages improvisation and dynamic interaction among the musicians. Jazz bassists, through their walking basslines, are instrumental in maintaining the pulse and providing a platform for creative musical expression for themselves and the other musicians. Aaron describes his view on pulse and playing walking bass: "I think the pulse is usually the quarter notes in a song, you know. That's how it feels in a lot of jazz stuff, at least. I think, and when I play a lot of walking basslines, I'm playing a note on every quarter note, so it often feels like I'm almost the pulse itself."

The respondents also shed light on the dynamic relationship between drummers and bassists, the drummer-bassist relationship is not confined to a specific tradition but serves as a testament to how pulse transcends traditional boundaries. Both jazz bassists claim that the drummer and bassist collaborate closely to establish and maintain the pulse, fostering a seamless connection that is essential for rhythmic coherence in various musical contexts. This observation can also be applied to both classical double bassists. As described above, their role, at times, is similar to that of jazz bassists, where they are responsible for maintaining the pulse and ensuring that other musicians follow them. However, it appears that classical double bassists do not often discuss the relationship between the bassist and the drummer but rather see themselves and their instrument as integral parts of a rhythm section. In these contexts, classical bassists share the responsibility for maintaining the pulse with others, akin to how jazz bassists describe their mutual engagement with drummers. Regarding this, Kim talks about the similarities between playing jazz and western classical music as a bass player, and specifically the role of the bassists within Baroque music:

In Baroque music and jazz, both genres place emphasis on the continuo part or the rhythm section. Consequently, the continuo in Baroque music plays a similar role to what the groove section performs in jazz music, which is to drive the pulse forward. (Kim)

Charlie, one of the double bassist from the jazz tradition, describes her role concerning various instrument groups within jazz ensembles as follows:

Well, I think, at least within jazz, if you're more like, you play drums or bass, you're really kind of enslaved to, um, the rhythm section. The accompaniment, you know, but whereas, like, wind instrumentalists, for example, have it so easy and can just ride on what you and the drummer are building, so they can really enhance, like, the pulse and timing much more. (Charlie)

Aaron describes how, in an ensemble, playing with the drummer, they construct a foundation similar to a pyramid. He and the drummer form the base, establishing the pulse and tempo. The drummer, also positioned on the level above, embellishes the foundation. At the top are the
other members of the ensemble, who can work more freely over what he and the drummer have established. "So it often happens that I... I'm almost the pulse, you know. and the drummer embellishes that, and the others get to soar on top". A recurring theme among the two double bassists who have studied the bachelor's program in jazz is that they often discuss their instrument in combination with others, but there is a particularly crucial collaboration with drummers, showcasing their mutual engagement. Their way of discussing aspects of the *temporal organization of music* revolves around their responsibility to others, building a foundation upon which others can stand. The role they describe for their instrument permeates their explanations of concepts such as rhythm, pulse, and meter when discussing musical collaboration with others. There is a commonality among all double bassists, those who have studied jazz when they discuss drummers and those with a background in classical music similarly talk about riffs and driving the pulse forward.

### 6.1.2 The role of music teachers

Teachers can be viewed as key figures within the communities. This is due to the fact that they are individuals referred to as knowledge bearers and central to the respondents' participant trajectory. During the interviews, the respondents delved into how their teachers had talked about pulse specifically in relation to the double bass. In more challenging classical pieces, tempo can vary significantly, both gradually and suddenly. Understanding the length of measures and the subdivision of the music is of great importance, according to the respondents who have studied or are studying classical music. Franz describes a situation in the beginning of his bachelor's programme where he had to play a piece where parts of the composition's phrases were pushed forward in the measures, making it feel like the time signature of the piece changed. He continues to explain that at the time, he didn't have a strong relationship with pulse in his musicianship, leading to many mistakes and nervousness when performing the piece in front of an audience. A year later, he had to play the same piece, but this time, he sought help from his double bass teacher. His teacher emphasized the importance of feeling the pulse strongly and counting both the beats and subdivisions. They worked on this together, and instead of practicing the piece on the double bass, Franz spent time counting. He also played the part on the double bass with a metronome and gradually increased the tempo. He describes a moment when everything “clicked”, and he suddenly “understood” the piece. This became a strategy he now uses when learning to play new pieces. 'It was so satisfying to get it right because then other things I played didn't seem as difficult, and understanding the placement, where the beats fall in the measure.' Franz on counting and feeling the pulse as the foundation of his musical performance. This collaborative effort between Franz and his teacher showcased their mutual engagement in understanding the fundamental aspects of pulse, contributing significantly to his musical growth.

In his interview, Kim emphasizes how his teachers have conveyed aspects of the *temporal organization of music* to him. He describes how different instructors have approached topics such as rhythm and pulse from varied perspectives. "My latest bass teacher, he has played a lot of modern music, so he has a very, let's say, a very mathematical... view of rhythm and a very precise way of approaching it," he explains. He goes on to discuss another teacher who
according to him did not provide clear answers on aspects within the *temporal organization of music*:

> When he talks about rhythm, he could sometimes mean pulse, and when he talked about pulse, he could sometimes mean rhythm. And sometimes, he meant tempo changes." Kim also notes that this specific teacher seemed more "flexible" in his definitions of things that, for Kim, are very clear and mathematical, aspects that have a precise definition. "Sometimes, I've experienced a bit of frustration in that. (Kim)

However, Kim distinguishes between discussing these aspects from a theoretical standpoint and how they are communicated in practical musical situations. He states regarding the difference between theoretical discussions about pulse and rhythm and the dynamic that occurs when actually playing music: "But then in practice, when you're rehearsing, when you're working with it, I think something else happens. People are much 'looser' in how they express themselves sometimes,"

Charlie describes a nuanced perspective on her relationship with education and teachers, particularly reflecting on her early engagement with music within the classical tradition. Jazz became a later pursuit for her, and she articulates her familiarity with playing from sheet music and appreciating a structured approach in ensemble playing and learning environments.

> "I was genuinely classically trained, so I was very tied to sheet music and enjoyed structure, having notes. Many jazz teachers, on the other hand, are not at all structured and don't appreciate sheet music and such," she explains.

Later in the conversation, she reveals that she distanced herself from much of the classical approach during her time at a folkhögskola (a sort of Swedish community college). However, in recent years, she has revisited that aspect of her musical identity related to musical traditions. Reflecting on her experience in jazz education, she states:

> I really liked the classical teacher at the school. We ‘clicked’ very well, and I didn't connect as much with my jazz teachers, perhaps. We didn't ‘click’ as well in terms of how I needed to learn. It feels like there's a balance between both that I can identify with. (Charlie)

Charlie discusses how she felt she could learn from both musical traditions and expresses that, in some cases, she can identify with aspects of both the classical and jazz tradition, she also describes having a need for chemistry with her teachers.

In summarizing the respondents' experiences, it's clear that their diverse views on various bass teachers encountered during their music education journey have shaped their *participant trajectory*, regardless of their proficiency levels. While these teachers significantly influenced their musical growth, there were instances where a lack of connection arose, particularly regarding the *temporal organization of music*. This lack of alignment might have stemmed from differing starting points or frustrations, hindering optimal collaboration between the
respondents and their teachers in achieving mutual engagement concerning temporal organization of music.

6.1.3 Curriculum

The school could be viewed as an entire realm of mutual engagement, as both upper secondary school students actively choose to be there independently. They have selected their programs voluntarily, and there is no obligation to pursue graduation. The entirety of the students' participation serves as evidence that mutual engagement permeates the entire education system within the upper secondary school level.

In these reflections on musical education, the respondents highlight the nuances within the curriculum for the arts programme in upper secondary school. This is done to examine whether the respondents themselves believe they have acquired the knowledge described in the curriculum during their time in upper secondary school. The respondents held diverse views on this matter; therefore, statements reflecting their differing opinions about the curriculum's content from the interviews will be presented. The excerpts shown to the respondents have been featured in chapters 1 and 3. Within those chapters, two of the curriculum's objectives describe opportunities for students in the following manner:

- Knowledge of music, concepts, and stylistic elements from different times and cultures.
- The ability to create and arrange music for one or more selected types of ensembles.

(Skolverket, 2023)

Franz reflects on his understanding of music and acknowledges his ability to arrange music but the lack of capability to compose it from scratch. "I know a lot about music, but I can't write it. I've done tons of arranging though, from vocal groups to symphony orchestra."

During upper secondary school, Franz described in his own words a theory teacher. He encouraged students to ask more questions, and they were always generous with further explanations. The atmosphere in their group was conducive to collaboration in addressing uncertainties and filling knowledge gaps within the temporal organization of music together. This approach made Franz realize that continuous learning was an ongoing journey toward understanding. "This pursuit of knowledge resembled a quest, unfolding as an ongoing journey towards understanding."

Charlie points out that the music teachers focused more on sustaining interest rather than deepening knowledge, suggesting a less ambitious approach to education and a direction towards simpler music activities, like using existing songs rather than creating original arrangements. "I don't think we were allowed to arrange much, to be honest. It was more like mostly playing a bit of arranging that the teachers had written for different things."
Charlie paints a picture of her time in upper secondary school, indicating that arranging wasn't something they focused much on. She also describes that, having been involved in music since a young age, she was already familiar with several musical concepts, and she didn't feel that she gained much in terms of that from her time in upper secondary school:

Terms and stuff, it's not like, you know, it doesn't ring a bell directly. I think it was more if you maybe showed that you were interested yourself. I also attended a lot of music school outside of the arts programme, so I took lessons there, and that's maybe where I got it from. (Charlie)

Aaron emphasizes the lack of comprehensive music history education, highlighting the focus on playing various music genres in ensembles rather than studying their historical context. There's a perception that the teaching was limited to certain periods or genres, particularly lacking extensive coverage of classical influences. Aaron describes that stylistic elements are something he acquired through ensemble lessons, but music history wasn't a priority:

We perhaps didn't go back further than... early jazz music, you know. There weren't many classical influences. [...] So we went through many different music styles that we played in the ensembles, but it was more about identifying certain characteristics and playing them rather than... rather than knowing the history behind them. (Aaron)

However, he mentions that he gained knowledge of concepts and stylistic elements from his time in upper secondary school: "Yeah, but in terms of concepts and stylistic elements, we got some of that. It still came up in many different courses."

When it comes to the Curriculum provided by the Skolverket, it appears that it hasn't been fully met by the schools attended by the respondents in this study. In the case of encountering various stylistic elements, concepts, and ensemble types, their participant trajectory hasn't been entirely fulfilled. It's worth mentioning that all respondents have not attended upper secondary school for at least five years, and remembering how one's school has or hasn't fulfilled the curriculum can be challenging through the eyes of a former student.

6.2 Joint enterprise
Working towards common goals, a central aspect of joint enterprise, permeates the interviews when the respondents talk about collaborating with others. This is noticeable as they not only engage in discussions about developing individually on their instruments, but also underscore the significance of being proficient enough in their craft to have active participation in musical contexts. This becomes apparent when they share their experiences of playing in musical settings that are unfamiliar to them. A significant component of joint enterprise involves identifying norms within the communities, and one such norm will be examined under the heading of Swing.

Under this heading, empirical data is presented concerning how the respondents perceive situations where they are not playing music they consider familiar. In this context, the focus is primarily on the obstacles within the temporal organization of music that arise from
experiences shared during the interviews. Following that, there is a section on swing and its role in jazz and how the respondents from the jazz community conceptualize it. Finally, the respondents' thoughts on excerpts from Skolverkets curriculum are presented, where they discuss their experiences of upper secondary school and whether they feel they have achieved the goals outlined in the curriculum during their time in upper secondary school.

6.2.1 Keeping time

This section presents one of the respondents' shared goals which was keeping time. This is done from the perspective of all the respondents individually, the larger community of double bassists, and also explored within the context of the two other communities: jazz bassists and classical bassists. The section examines how the different communities conceptualize pulse, both individually and within their respective musical contexts. This is where the respondents actively share their shared main goals related to temporal organization of music.

According to the two classical double bassists, in the classical tradition, a sense of good timing is crucial for dealing with varying tempos and or in complex compositions. Respondents shared experiences of how they conceptualize pulse and employ counting as a strategy for mastering challenging pieces, as previously mentioned. In the jazz tradition, the joint enterprise would be the practical skill of being a "walking metronome" through the act of playing walking bass, facilitating improvisation and rhythmic cohesion. Within each community (classical and jazz), the joint enterprise includes a goal or norms, exemplifying the distinct knowledge and practices that form part of their community's identity.

Kim and Franz underscore the significance of a shared pulse when collaborating with other musicians and keeping time. "To be able to feel the pulse, it is extremely essential to be able to play, to play with others" is one of the first things Franz says during the interview. They acknowledge the necessity of synchronizing with fellow musicians, especially in the classical orchestra setting, where unity is paramount. The shared pulse forms the basis for a harmonious and coordinated performance, ensuring that the musicians are all playing as one cohesive entity, something that can be described as a shared goal.

Franz shares his thoughts about how different musicians in an orchestra can have responsibility over the pulse and tempo at different times: "One sends it back and forth between each other; if I have a long note, but then the singer has their little rise, it sort of determines where the pulse ends up." Franz also mentions that in certain cases, the "conductor has the privilege of determining the pulse precisely." So, in the interplay where musicians at different stages have varying responsibilities for the pulse, the conductor is also a significant factor when it comes to the pulse in classical music. But just like the musicians, Kim also claims that sometimes the conductor must let someone else take over the responsibility for the pulse. "Well, theoretically, it should be the conductor, hehe. But then it doesn't always turn out that way!"
6.2.2 Playing unfamiliar music

In this section, it is examined how the respondents describe situations where they play music that is unfamiliar to them. When discussing obstacles that may arise in such situations, they referred to the sense of swing and understanding the foundational aspects of the temporal organization of music they are playing. The way the respondents discuss these situations indicates that they desire to comprehend the music they play both theoretically and aurally, and that it is something one may need to work towards achieving. Something that we, the authors, see as a norm within the larger community to which all respondents belong.

Aaron reflects on an occasion when he was to play Swedish folk music: "In that case, it would have been better if I just played like a jazz bassist who knew nothing about folk music swing." He talks about the different genres having distinct swings, and with his background, he noticed such a significant difference that he found it challenging to keep up with the other musicians. Aaron describes a difficulty to understand the beats when playing folk music:

> Because the pulse is kind of flexible in, for example, folk music... There were different lengths of the one and three beats from song to song. And yeah, it was really difficult to grasp that thing... That the pulse itself was quite flexible, you know. (Aaron)

This resembles how the classical double bassists described pulse and their approach to it. However, Aaron suggests that he experienced this flexible pulse within folk music. "There's always a reason for those things that make it swing for some reason. And I try to feel the swing rather than trying to figure out how the pulse works, you know."

The connection between the pulse and the swing is a bit vague according to the two jazz double bassists. Aaron mentions that when he wanted to find the swing, he moved away from understanding the pulse, as if he just let the music guide him forward instead of the other way around.

When Franz discusses how he experiences playing music that is unfamiliar to him, he starts from what he already has the ability to do. He describes having technical playing skills and an understanding of the *temporal organization of music* but within genres he is comfortable with. "I have the technical playing prerequisites, but I don't have the musical understanding of the genre," he says. He suggests that there are different understandings of *temporal organization of music* within different traditions and that regardless of his technical proficiency, it becomes a hindrance in these situations.

Something all respondents emphasize is that a significant tool when it comes to *temporal organization of music* is listening. Listening to those you play with, to pinpoint who is leading the music forward during a particular phrase, Franz describes this in the following way:

> A lot of things depend on active listening all the time. Knowing what to listen to, too. Is the pulse in the singer? Is it me who has the pulse? Does the second violin have the pulse in their part now? (Franz)
Another way the respondents describe listening to the other musicians as a tool to find a common pulse, Kim describes: "You have an accompaniment figure orchestrated for several instruments, and then it becomes a matter of listening to each other. And somewhere in there, a pulse arises in the music".

Charlie describes situations where the musicians have ended up out of sync, where the musicians in the room are not quite musically aligned. Listening is her way of trying to find her own place in the musical context. "But it's often like I just try to listen to what the others are doing, that's my number one, you know".

This collective emphasis on active listening points to a joint enterprise within the musical performance, where aligning with others' contributions forms a crucial aspect of achieving temporal organization in music and musical coherence.

6.2.3 Swing

Both jazz bassists talk a lot about swing. They discuss it in a way that swing in music can sound and be felt when played, as both a feeling and a music-theoretical phenomenon. It's important to note that in this case, swing is a translation from the Swedish word sväng, a term that might be more closely associated with "groove." However, in the context of this study, we use the translation "swing" just as described by Strandberg (1999). Charlie suggests that swing is something that sounds different depending on the type of jazz one is playing, but that swing is often something one wants to achieve. Charlie talks about swing being like a kind of weight in the pulse, and that it becomes harder to feel when playing a song that has a slower tempo:

I want it to swing, you know, when playing. When you feel that a song has that kind of drive, but also with the pulling of the tempo, it depends on how slow the song is; it's so darn difficult to feel it... The weight that the pulse might have. (Charlie)

Swing is something that appears to permeate both jazz double bassists' statements about pulse. It seems that swing is a norm that recurs in contexts where they make music, indicating this to be a joint enterprise within jazz music.

Aaron reflects on his previous perspective on music, where he prioritized precision and accuracy as paramount. During his years in upper secondary school, he believed that having good timing was the most measurable and significant aspect of a person's proficiency in music. However, as he gained a different point of view, he realized that other elements, such as "swing," expression, and feeling, might hold more importance than strictness, intonation, and perfect technique. "I thought that being tight was the only important thing because I could measure it so clearly when I was in upper secondary school."

Aaron reflects on his approach to music, emphasizing the importance of feeling swing in the music rather than strictly following the beat. He advocates for a more embodied engagement with the music, suggesting that moving with the rhythm facilitates a deeper understanding of
its rhythmic elements. "Move a bit more, try to get my body into the swing that the music has, you know. Makes it easier to grasp those things, I think."

6.3 Shared repertoire

*Shared repertoire* places emphasis on stylistic features and genre preferences within the communities, another aspect within *shared repertoire* is vocabulary. The same concept can have different connotations within the various communities; their vocabulary varies. In this section, the respondents' conceptualization of the concept of pulse will be presented to explore how the same concept can embody different stylistic preferences and meanings.

6.3.1 The respondents conceptualization of pulse

Kim offers a perspective on musical pulse, drawn upon personal experiences in music, specifically western classical music. Pulse, in Kim's view, isn't a static, lifeless marker but a living, dynamic force that fuels music with its very essence. It's about uniting musicians, synchronizing their rhythms, and forging a profound connection between performers. For Kim, pulse acts as both the foundation and the compass, able to ebb and flow during performances. "It is both foundational and a standard, in a way. Um, it's something that, well, one must, one essentially needs to start from." Kim describes his view on pulse.

While conductors often lead the way in establishing pulse, Kim knows that real-life situations can paint a different picture. In discussions regarding collaboration and adaptation within an orchestra, Kim suggests that collective adjustment, compromise, and synergy are pivotal. This parallels, in Kim's view, the collaboration within a band's groove section, where musicians attune themselves and find a shared "pocket" to harmonize together. Kim describes this as, "a collective adjustment is a very fitting term. Or a compromise or a synergy, I think, is a good term because you sort of find a way that fits together."

Charlie's perspective aligns with Kim's multifaceted view of pulse, rooted in personal musical experiences. Pulse, to Charlie, embodies a unique concept with various facets. There's an inner pulse that springs to life during solo performances – a personalized rhythm that resonates with the soul of the music. However, when collaborating with others, a shared pulse emerges, weaving the musical fabric. This shared pulse is like an invisible thread connecting musicians. She states the following: "I want to say it's [the pulse] more alive, even though one may strive for it to stick to a certain tempo or pulse, but… I like for the music and stuff to be very lively and all." While adhering to a tempo is crucial, Charlie cherishes the vitality and the emotions within the notes, recognizing that the music's pulse is a living force resonating with musicians and listeners. Charlie continues:

As long as it feels good, I think it works, it clicks, and then you can always delve into the details. But now, as I've really tried to convince myself, it's about allowing music to be very lively. Which, I believe, it should be. (Charlie)

Aaron, provides a perspective on musical pulse that goes beyond facts and figures. Pulse is akin to the lifeblood of music, a rhythmic force that sustains the musical journey. Aaron
believes that pulse isn't just about rhythm – it's about the vibrant energy that keeps musicians in sync. It's the living essence of music. According to Aaron, pulse isn't confined to a static beat; it's a living entity that responds to the ever-changing expressions in music:

Pulse is, you know, it's akin to a pulse in a human body, it's like the heartbeats that sustain and unify the music. It unifies the musicians in a way similar to how the heart sustains all organs and everything in the body with its pulse. (Aaron)

Aaron talks about how pulse is a changing musical phenomenon that the musicians have power over. It's a connection between the musicians, a shared heartbeat that creates a profound musical experience:

I also mean that the pulse doesn't always have to be the same, as it's often mentioned in definitions. Instead, I believe that pulse simply needs to be what the musicians playing the music agree upon, so to speak. (Aaron)

For Franz, pulse isn't just an abstract concept – it's a vital force that unites musicians and infuses life into performances. He also draws parallels to the human heartbeat (much like the other respondents), emphasizing that pulse isn't a lifeless metronome but a rhythmic lifeforce. For Franz, the strength of pulse lies in its ability to adapt – it can be steadfast or ever-changing, depending on the musical context. "It’s both solid and fluid. Yes, it’s a feeling in the music." The adaptability of pulse reflects the dynamic nature of music, responding to the unique demands of each composition. He also suggests that since the pulse can vary so much in different pieces and even within a piece, it is crucial to be constantly alert to these changes. "... and the pulse can change; it can go back and forth. And if you're sitting completely static, then you have no chance to catch up".

Rather than being rigid and unwavering, Franz, just like Aaron, views pulse as a collective agreement among musicians. Franz acknowledges the nuanced nature of pulse, recognizing its ability to transition between being dynamic and constant. While Franz primarily perceives pulse as a living entity within music, there's an understanding that some scenarios may necessitate a more static pulse. The flexibility of pulse is the key, allowing it to align with the specific requirements of different musical compositions and contexts. Regarding the different nuances in march music and operatic areas and how he interprets the pulse, Franz states:

When it comes to marching music, there's an extremely static beat. But then, when I'm playing an operatic aria with those long, swooning twelve-eighth measures with super tenors, there's still a beat, but it's extremely fluid. I'm constantly subdividing it and listening to the soloists' feel while playing to feel the pulse, either throughout the twelve or throughout the twenty-four, depending on how slow the tempo is. (Franz)

The respondents' conceptualization of pulse reveals that, fundamentally, they share a common understanding of what pulse entails. However, the terms they choose to describe the phenomenon vary slightly. There is, therefore, a foundational shared repertoire when
addressing this. Below is a more detailed description of how the two different musical traditions have specific stylistic features that are unique to each of them.

6.3.2 Double bass and pulse in Jazz

As previously mentioned, the shared repertoire includes stylistic features and genre preferences. When the respondents discussed pulse and how they conceptualize this aspect within the temporal organization of music, preferences and stylistic features within the two musical traditions emerged. These will be presented below.

Both Charlie and Aaron approach the concept of pulse with a profound sense of dynamism. They share the belief that pulse is not a static or inflexible element within music; instead, it's a living and breathing force. However, when it comes to describing what pulse actually means, both of them respond relatively theoretically. The pulse is something that indicates tempo and gathers musicians around the same focal point. "So, in plain terms, it's the tempo of the song, you see" Charlie describes. There are also points when they conceptualize pulse as something that lives inside of you and creates a feeling individually but also together with other people. "In jazz, there's also a lot of talk about getting "in the zone" and all that, finding your "inner time"." .

Collaboration is a cornerstone of jazz, and Charlie and Aaron emphasize the importance of a shared pulse when playing with others. “It's quite common for someone to play the pulse very distinctly. It's often something that's always there, churning away in the background” Aaron states when describing how the pulse can manifest in an ensemble setting. They both recognize that when musicians join forces, a common pulse emerges, uniting them in rhythm. It's this shared pulse that makes collective performances in jazz not just an ensemble of musicians but a harmonious and synchronized musical entity. This shared rhythmic connection becomes the backbone of their collaborative efforts, allowing them to both play in time as an ensemble but also divert from it. Aaron describes pulse as a musical foundation when playing with others, and that you can also depart from the pulse while playing, but that you later must find your way back to the pulse collectively:

It might actually be more about, um, sensing that you have a bit of the same pulse in the band, and from that, you can create a groove, and from that, you can even do things outside the pulse, you know. And just knowing that when it really matters, we'll be able to agree on the pulse again, sort of. (Aaron)

Just as they highlight that one can depart from the pulse while playing, they also emphasize that the pulse is alive and can sway in different ways. Their conceptualizations range from clear explanations with terms like timing, swing, and various note values to the pulse's dynamic properties that are more emotion-driven. Charlie shares her thoughts about how the pulse should not always be rigid and static: "I feel that it should be very lively, you know. That it's okay for it to move while you're playing, it creates feelings."
Charlie and Aaron both appreciate the adaptability of the pulse in music. They describe that different compositions and musical contexts require a pulse that can change and adapt. This adaptability allows them to create authentic and expressive interpretations of the music they play, ensuring that the pulse is always in harmony with the musical content. Aaron states:

I see the pulse as something, um... alive, I would say, but it also must, there are also many occasions where it should be static, so to speak. It can probably vary for different types of music, I should say. I can emphasize that the pulse can certainly vary across different genres. (Aaron)

One aspect of the shared repertoire in the jazz bassist community seems to lie in the perception that the pulse is a foundation that isn't altered much within jazz. Yet, at the same time, it is considered dynamic and something that can evoke a feeling depending on the tempo and how much one stretches it. As mentioned earlier in the results section, jazz bassists talk about their role within the ensemble as a foundational pillar with significant responsibility for the pulse and tempo. Their role in relation to other instrumentalists is evident here as well; the other musicians can hover above their foundation, exploring various rhythms and tempos before returning to the base.

6.3.3 Double bass and pulse in Classical music

Kim and Franz concur that the pulse serves as the foundation of music, a common thread, and shared repertoire, uniting various musical expressions. In the classical domain, the pulse is a fundamental element that underpins the compositions they perform. Both regard the pulse as an essential point of reference in their musical interpretations, whether they are playing in orchestras or smaller ensembles.

Both Kim and Franz acknowledge the importance of subdivisions within the pulse, recognizing that classical compositions often require complex and intricate timing. They talk about subdividing the pulse to accommodate various tempos and styles. This adaptability ensures that the pulse remains versatile and well-suited to the demands of a piece. Franz suggests that even an inexperienced audience can discern if an orchestra is in disagreement about pulse and tempo. Kim highlights the rhythmic variability inherent in musical phrases, stressing that emphasis within a phrase can shift and doesn't rigidly adhere to a metrical rhythm: "It's immediate, even for an inexperienced audience. Noticing such things so... I realized how important it is to be, like, in sync with the subdivision".

He emphasizes the phrase as a central unit rather than a strict pulse marker. "This cellist I played with, I perceive she approaches pulse more as an attitude rather than using pulse as a basis to construct a phrase, which I might have often adhered to." Kim describes the loose interpretation of pulse within classical music. Moreover, Kim delves into the significance of following tempo changes within a piece and the necessity to be adaptive:

It's like a rubber band, in a way. The timing is like a rubber band, and every now and then, you take that slingshot and shoot a few shots, and then you have to be prepared because it doesn't shoot right away when you release it, it takes a while. (Kim)
In discussing the relationship between musical phrases and pulse in music, Franz emphasizes that a musical phrase encompasses elements beyond pitch and volume. He likens this process to constructing an arch, where each step contributes to shaping the sound and direction of the music. "Sometimes... you're completely bound to the pulse. In such instances, if, for example, the double bass section integrates a melody loop within the symphony, it's likely a pulse that needs to be followed."

Franz recounts his initial experiences with opera, detailing the challenges of navigating the flexible interpretation of pulse. Despite attempts to adapt by subdividing and employing specific playing techniques, he found these efforts unsuccessful in achieving the intended outcome. His struggle to adapt to this flexible interpretation resulted in difficulties in maintaining a consistent rhythm. Franz shares his challenges with the loose rhythmic interpretation:

At that moment, it truly felt like it was just the phrase, and I thought to myself, 'Now I'll sit here and be diligent, subdividing,' but it didn't help because what I had in mind was off course. (Franz)

Following timing challenges during an opera performance, Franz sought guidance from fellow musicians, observing their approach to grasp the timing. Franz's insights into adapting to a more fluid pulse, particularly within the context of opera, eventually proved beneficial: "Look, yes, but focus on the conductor and try to solely listen to the singer. Breathe, and try to synchronize your breath with the music to immerse yourself more deeply into the phrase."

It seems that one reason classical double bassists describe the pulse as they do is due to the looseness of the pulse within classical music. It can quickly change and is relatively fluid. Another reason for how they conceptualize it is that, unlike jazz double bassists, they are often in musical scenarios where they need to follow another part or a conductor more rigidly. It is not their responsibility to ensure that the pulse is steady or that a tempo is maintained; sometimes it should be more flexible, and at other times, it is even a specific part or phrase that they follow instead of what refers to as the pulse. This is a fact that jazz double bassists do not discuss to the same extent, making it a specific aspect of shared repertoire in the classical double bassists' community.

6.4 Summary
For Franz and Kim, who identify themselves within the Western classical music tradition, their conceptualization of temporal organization of music is strongly influenced by their education and experience of playing within the classical sphere. They emphasize the importance of precision and understanding of musical structures, especially in complex musical pieces. Their view of pulse and rhythm is deeply rooted in their experience of working with sheet music and mastering technical aspects of musical performance. As pulse can be highly fluid in classical music, their conceptualization of it is also dynamic; pulse is something living, breathing, and flowing. However, they also understand that pulse can be more static, and tempos can be strict and not flexible.
For jazz bassists Charlie and Aaron, their perspective on temporal organization of music is much about feeling and swing. They place great importance on swing and expression, which are central elements in jazz music. Their understanding of pulse and rhythm is not only theoretical but also emotionally anchored, with a focus on evoking a lively and rhythmic sense in the music. They emphasize the collaboration between bassist and drummer, building a foundation that allows other instrumentalists to play more freely.

These differences in conceptualization reflect the unique requirements and emphases within their respective musical traditions, highlighting the diversity in the interpretation and application of temporal organization of music in double bass playing, whether within jazz or Western classical music. Furthermore, they emphasize the importance of active listening as a tool for understanding and adapting to the direction of the music. Jazz bassists also discuss the subtle but significant role of "swing" and how this musical phenomenon is not only a music-theoretical term but also a feeling and weight in the pulse.

The classical bassists contemplate the relationship between musical phrases and pulse. They emphasize that phrasing, delineating music into sentences or ideas, can influence the pulse and rhythm of a song. They also point out that the pulse and rhythmic flow can dictate how musical phrases are delivered and interpreted. They describe how a musical phrase can drive the pulse through its rhythmic arrangement and structure. Simultaneously, they stress that the pulse can also be the guiding force shaping how phrases are presented and interpreted. This indicates a continual mutual influence between how music is structured in phrases and how the rhythmic pulse of the song is perceived and delivered. Their reflections highlight the intimate connection between phrasing and pulse, showcasing their mutual impact in shaping and expressing musical content.

In addition to this, they reflect on their music education in upper secondary school. It emerges that music education has not always fulfilled the various aspects outlined in the curriculum for the arts programme in upper secondary school, especially concerning the understanding of music history and various stylistic elements. Their experiences of education vary from focusing on sustaining interest to the lack of in-depth knowledge and understanding of different musical contexts.
7. Discussion

In this chapter, the results will be discussed and compared with previous research in the field. Following this, the method will also be scrutinized and evaluated. Subsequently, the music pedagogical implications raised by the study will be discussed, focusing on the results related to the Skolverket's curriculum for the arts program at upper secondary school and teacher competence. The chapter concludes with a section on suggestions for future research.

7.1 Result discussion

Under this heading, the study's results are discussed by comparing them to previous research within the field. First, the discussion focuses on the shared pulse and the responsibility that comes with it in an ensemble context. Next, the concept of swing is examined, considering both psychological and theoretical aspects. The section concludes by discussing how the interplay of emotion and precision in musical experience.

7.1.1 The shared pulse and responsibility

When analyzing the empirical data from the studies interviews, we found that diverse viewpoints relating to the temporal organization of music emerged. Even though Parncutt's(1987) research is from a different research field than this study, one can argue that there are similarities between Parncutt's quantitative research and how the participants in this study describe the concept of pulse.

Franz and Kim, representatives of classical music, emphasize precision and understanding of musical structures. They both share that their conception of pulse and rhythm is deeply rooted in interpreting scores and mastering technical aspects. Parncutt's research, focusing on pulse salience, sheds light on their stress on precision and the dynamic nature of pulse within classical music (Parncutt, 1987). Conversely, jazz bassists Charlie and Aaron highlight sensation and swing in music. Their view of pulse and rhythm is not just theoretical but also anchored in a musical feeling, focusing on evoking a lively and rhythmic sense.

The differing viewpoints among the interviewed double bassists highlight the specific demands within their respective musical traditions.

The contrasting perspectives among the interviewed double bassists reflect requirements within their musical traditions. Parncutt's research highlights perception of pulse and rhythm, showcasing the dynamic or static nature of these perceptions. Moreover, Parncutt's focus on predicting pulse perception prompts discussion on the interplay between technical and emotive aspects of musical expression (Parncutt, 1987), something that can be observed in this study's result through the respondents statements regarding locking timing amongst the different ensemble types. Franz and Kim's verbal reflections reveal how they see musical phrases and pulse mutually influence each other, showcasing the reciprocal relationship between structuring music in phrases and perceiving its rhythmic pulse.
According to this study's two classical respondents, a musical source guides the pulse. It can either be a musical voice, conductor, soloist, or a musical phrase. However, there is a shared collaborative effort at work. The classical bassists deeply reflect upon who controls or bears the ultimate responsibility for the pulse, including tempo and its timing. They discussed following a soloist or a voice, in contrast to the two jazz double bassists who describes focusing on establishing a foundation over which other musicians, voices, or soloists can freely float. While the classical double bassists emphasize being guided by the pulse or following another voice, conductor, or soloist, they also discuss that the pulse and the responsibility of maintaining a musical flow are collective among all involved in the musical context. It's something shared and accomplished together. The jazz double bassists, as mentioned, discuss pulse and tempo as something they are responsible for, establishing a foundation for others, often in collaboration with a drummer. They discussed the shared responsibility and feeling, stating that if there is a common understanding of the pulse, they can collectively deviate from it to return to the original tempo or pulse at a later stage. Parnicutt (1987) suggests that there is a shared pulse when playing music with others. If someone starts playing at a slightly faster or slower tempo, fellow musicians instinctively follow, often without consciously reflecting on it. It's like an ebb and flow of listening and collaboratively creating a tempo or pulse within the musical context they are participating in, which Parncutt (1987) refers to as pulse salience.

In summary, all double bassists in this study agree that pulse is fundamental in their musical performance, yet their approaches to it differ among the various traditions. A common perspective among all four respondents was that pulse can be something shared, and that this is a crucial aspect when it comes to playing music with others.

### 7.1.2 Swing

Both jazz bassists who participated in the study extensively discussed the concept of "swing" during their interviews. According to both of them, possessing swing is not synonymous with strictly adhering to a beat or tempo. Aaron suggests that it is preferable to sense the music and follow the swing rather than strictly adhering to "the beat" or pulse. For these bassists, swing becomes a sensation rather than a theoretical phenomenon, and they approach it from a more psychological perspective.

Strandberg (1999) argues that perfect timing does not necessarily imply that the music swings. Counting and a strict adherence to the pulse are not the fundamental essence of groove and swing. According to Strandberg (1999), being relaxed and calm while playing is crucial when aiming for swing in a musical performance. Strandberg associates swing more with movement and dance, emphasizing the involvement of the body in the music being played. Both jazz bassists discuss swing outside the confines of strictly adhering to a pulse, approaching the topic in a manner that emphasizes tranquility and connecting with the music through feeling rather than theoretical thinking and correctness.

Similar to Strandberg, Butterfield (2010) contends that the swing in jazz is not solely about precise timing; it also involves how the musician actually plays their instrument. Swing extends
beyond maintaining timing and delves into a realm of technical aspects of playing, how the musician utilizes their body, and a sense of calm that permeates the musical performance (Strandberg, 1999; Friberg & Sundström, 2002). Charlie spoke about a "weight" in the pulse as a crucial aspect of what constitutes swing. This notion can be likened to Butterfield's (2010) discussions about the sensation of "push." Something else occurs within the beats that becomes decisive for achieving swing in musical performance. Charlie further extends this line of thought by describing that since the weight in the pulse is a contributing factor to swing, it can be challenging to achieve swing at certain tempos.

Davies et al. (2013), who have conducted research on the topic in more theoretical terms, discuss microtiming in relation to swing. Microtiming is something they consider crucial for expressive music performance, but they argue that systematically working with it on a theoretical level does not necessarily enhance groove and swing. This aligns with the findings of the present study, suggesting that swing is not a purely theoretical concept when musicians conceptualize it within the realms of groove and musical expression. If one juxtaposes this theoretical approach to swing with the findings of this study and Strandberg's (1999) statements on the same subject, it inevitably leads to the conclusion that swing is not something that can be achieved through a purely theoretical perspective; it extends beyond theoretical frameworks.

7.1.3 The Interplay of Emotion and Precision in Musical Experience

According to the respondents the conceptualization of pulse is inherently subjective, embodying a deeply personal experience that defies easy classification as "right" or "wrong". This aligns with London's assertion that its subjective nature prohibits rigid categorization (London, 2012). Gabrielsson (2020) underscores the importance of emotional engagement in musical perception, echoing the sentiments of the jazz bassists Charlie and Aaron, who stress the significance of feeling and expression in their perspective on the temporal organization of music. Gabrielsson's research elucidates that emotional elements like swing and expression aren't purely abstract concepts but serve as foundational components in crafting a dynamic and emotive musical encounter.

Moreover, Gabrielsson (2020) contends that music perception is a multifaceted process encompassing both cognitive and emotional dimensions. This aligns with Franz and Kim's interviews, where their interpretation of pulse and musical rhythm deeply relies on technical precision and comprehension of musical structures. Incorporating Gabrielsson's viewpoint on the intricate nature of music perception offers a comprehensive understanding of how emotional and technical factors interplay in shaping rhythm and pulse perception across diverse music genres.

7.2 Method discussion

Under this heading, the study's method and analysis will be discussed. Initially, the data collection, including the study's interviews and participants, will be addressed, outlining
potential improvements and highlighting successful aspects. Following this, a section on Community of Practice as an analysis method will be presented, discussing our experiences of utilizing it in this study and considerations for future applications in similar studies. The section concludes with a paragraph providing an overarching description of the workload involved in the study.

7.2.1 Data collection and participants

In order to address the aims and research inquiries of this study effectively, the utilization of interviews as a method for data collection was imperative. Given that the study aimed to explore how double bassists from different musical traditions conceptualize elements within the temporal organization of music, specifically jazz and Western classical music, it was crucial to capture the qualitative responses of our respondents in their own words rather than imposing our interpretations. Additionally, conducting a pilot interview before the actual interviews was of utmost importance to give ourselves the opportunity to refine our questions, ensuring their clarity and direction. Early in the pilot interview phase, it became apparent that our questions were highly specific to our respondents, which posed challenges for our test participant, as their main focus did not encompass bass or double bass studies. Consequently, the questions needed a more comprehensive approach to facilitate a smoother flow of the interview.

Initially, our plan involved selecting three respondents from each musical tradition. However, we arrived at the conclusion quite early in the process that this approach would entail an overly extensive workload. It is paramount for us, as authors within the confines of this study, to meticulously analyze the gathered material and present it as accurately as possible in the results section. This realization led us to understand that conducting six interviews instead of four would significantly escalate the workload. Consequently, we opted to conduct four interviews and concentrate on extracting as much information as possible from them, prioritizing quality over quantity. Given that the study primarily revolves around individuals' conceptualizations of the temporal organization of music rather than representing an entire tradition, the emphasis is not on the number of respondents.

Both authors participated in all the interviews conducted in this study. Before the interviews, we discussed how to ensure that the interviews would feel comfortable and secure for the respondents in a room with two interviewers. During the pilot interview, we experimented with one person conducting the interview while the other took notes. Afterward, we decided to adjust the second person's role slightly. Instead of merely taking notes, the second person became more actively engaged by asking follow-up questions, thus making the situation feel more like a conversation between all the individuals present during the interview. We also decided to explain these roles to the respondents before the interviews began, ensuring that they felt comfortable talking to both of us and did not feel overly observed by the one who also took notes and did not speak as much during the interviews.
All respondents are or have been students at the Royal College of Music in Stockholm, the same institution where we currently attend the music teacher programme and study. It is crucial to emphasize that we are not examining the school or the programs themselves; rather, we are investigating specific individuals who identify within two distinct musical traditions. Regarding whether the authors and respondents know each other, the answer is both yes and no. One of the authors is not acquainted with any of the respondents, while the other is familiar with one of them and had prior knowledge of the remaining three. Since we were seeking the respondents' conceptualizations of aspects within the temporal organization of music, being aware of the musical environments they inhabit is beneficial. As authors, we can have a pre-existing understanding of what these environments might entail. This enables us to engage in more meaningful discussions about the aspects that interest us within the subject matter, rather than getting caught up in technicalities about locations and structures that are not pertinent to the study.

7.2.2 About Community of Practice

An issue that emerged during the interviews was a shift in the analysis method after their completion. We transitioned from a phenomenological approach to Communities of Practice, a pivotal decision aimed at better capturing the essence of our interviews and connecting them to our purpose and inquiries. However, this shift also imbued the questions themselves with a somewhat more phenomenological foundation. Opting for semi-structured interviews as our method allowed us the flexibility during interviews to pose follow-up queries that could be analyzed in alignment with CoP principles, building upon the foundational questions.

By examining the empirical data through the lens of Communities of Practice (CoP), it was possible to identify how the respondents were part of various communities and understand their statements. This analysis also encompasses how individuals within the community share knowledge and the pedagogical norms that influence interpretations of aspects within temporal organizations of music. Consequently, statements regarding temporal organizations of music were promptly categorized within these communities. This allows for an exploration of how individuals from different communities interpret, conceptualize and learn about aspects within the musical temporal domain.

As we conducted interviews, there were several scientific theories that could have been utilized for the analysis, such as discourse analysis. We chose the CoP theory because it provided a foundation for defining the various communities to which the respondents belonged. CoP also offered a ready-made framework to follow in the analysis. With the help of this framework, we could examine different vocabularies and definitions of terms within the various communities under investigation, and discern why differences exist and what they entail. By incorporating the aspect we chose to term participant trajectory, we could further describe how knowledge-sharing within these communities manifests and how it impacts the individuals within them.
However, there were certain aspects of the CoP model that we did not quite capture during the data collection phase of the study. We believe that more could have been explored regarding how individuals within communities are at different levels of expertise in their craft. Additionally, identifying key figures within communities proved to be challenging. This is a consideration that we would like to highlight for further research. The identification of key figures could have been more precise if, for example, we had asked about potential role models for the respondents. We could have included more targeted questions about individuals in their respective fields who possess significant knowledge, such as music and/or bass teachers. This could have provided a clearer picture of how knowledge is shared and trickles down through different levels of expertise within the communities.

Upon deeper examination of our implementation of the CoP framework, we've identified potential complexities that warrant acknowledgment. The distinction between concepts like 'joint enterprise' and 'shared repertoire' occasionally presented challenges in our analysis. This ambiguity prompts a critical reflection, highlighting the necessity for clearer delineation within our application of CoP theory. A more precise delineation could have heightened the clarity of our analysis, distinctly outlining the boundaries between these integral CoP components. Our study could have benefited from a more nuanced exploration of these interconnected yet distinct elements within the CoP framework. Recognizing these intricacies, we acknowledge the importance of meticulous differentiation and articulation of these components for future research involving the CoP framework.

To conclude, the execution of this work has been extensive. We feel confident in having successfully addressed our purpose and research inquiries, contributing to further insights and knowledge regarding the subject. However, concerning prior research, navigating the available literature has proven challenging, given the absence of interview-based studies centered explicitly on the temporal organization of music. Consequently, we chose to lay the groundwork with previous research related to the terms pivotal to our work, demonstrating the existence of both theoretical and psychological research surrounding many of these concepts. This approach provided a comprehensive foundation, enabling us to interlace the respondents' words and thoughts with the research we presented.

7.3 Music pedagogical implications
Three of the study's respondents have somewhat mixed views on whether they have actually received assistance in achieving the goals set by Skolverket for the upper secondary schools arts program. During the interviews, it became apparent that they felt they had gained parts of what the curriculum emphasizes, but the extent of their exposure varied considerably. Another aspect we observed was that the respondents highlighted different courses and teachers that they felt the content aligned with their time in upper secondary school. One emphasized an instrumental teacher as crucial to achieving the program's goals, another spoke about ensemble teachers, and a third referred to prior knowledge and music education outside of school as more influential in learning aspects related to stylistic features, concepts, and knowledge of various ensemble types.
Some descriptions from the respondents portrayed a positive view of how the curriculum is fulfilled, such as when Franz describes his music theory lessons in upper secondary school as "a quest in the pursuit of learning." On the other hand, other statements painted a more somber picture, like when Charlie characterizes her time in the arts program as an environment where teachers struggled to maintain interest, and in-depth knowledge took a back seat.

When the respondents discussed their bass teachers, different aspects came to light. Franz emphasized that his teacher's knowledge of the temporal organization of music, specifically subdivision and meter, provided him with a new way to approach musical challenges. In the situation he described, he needed a more theoretical perspective on the structure of music and tools to understand it—a request he did not explicitly make to his teacher but one that the teacher contributed nonetheless. Kim experienced frustration in that some of the teachers he had encountered lacked a theoretical foundation when instructing him in aspects within the temporal organization of music. Teachers who would mention a term and then confuse it with several others, potentially meaning something entirely different, created frustration for him.

Charlie describes a sense that teachers from different musical traditions, according to her, have different approaches to teaching, and not all of these align with her personally. She gravitated towards more structure, notation, and the classical tradition, as this was something she grew up with, leading to a clash between her and the teachers instructing her in jazz music. This is reflected in Davidson, Howe, and Sloboda's (1997) research on instrumental teachers. They argue that the first instrumental teacher can be crucial for students and can shape their subsequent musicianship. Charlie may have been shaped by the norms and structure of the classical tradition in her early classical music education, as evidenced by her statements about a yearning for structure and notation to follow—something she contends is a less common starting point within the jazz world.

When examining Kim and Charlie's thoughts on their instrumental teachers, it becomes apparent that they have had a negative experience encountering teachers who do not share the same starting point as themselves. We believe this is something that both current and future music teachers should take into account. Not all students will be alike, and their past experiences will have shaped their preferences and how they perceive they learn best. Instrumental teachers should have insight and experience from multiple musical traditions to meet a diversity of students and possess the expertise to facilitate encounters between students and musical traditions they may not interact with independently.

Both Davidson et al. (1997) and Olsson (1997) argue that the relationship between students and teachers is the cornerstone of learning and that this remains true regardless of the students' age. Olsson (1997) also suggests that teachers' relationships with each other and with the students establish norms and rules within the school's social sphere, which, in turn, influences students' goals. This can be linked to Charlie's experiences. When she talks about never quite connecting with her jazz teachers, this may also be rooted in the foundational aspects of the social environment. The social milieu, along with all its accompanying facets, is shaped by all teachers' relationships with each other and their approach to students. Naturally, not every
person who comes into contact with a particular social environment fits seamlessly into it. This is something to reflect on—considering who feels comfortable and benefits from the social environment created in a specific school setting. How can one make it more inclusive so that all students can learn as much as possible, irrespective of the level of education?

Davidson, Howe, and Sloboda (1997) highlight the significant role of students' initial instrument teachers in shaping their genuine interest in the instrument and music as an art form. Regarding the value of musical experiences, as aspiring bass teachers, we recognize the importance of comprehending how bassists from different traditions, such as classical and jazz, perceive and experience the temporal organization of music. This understanding equips us with tools to appreciate and incorporate a breadth of musical expressions into our teaching. Through insights garnered from our interviews, we discern distinctions between classical and jazz bassists in their approach to the temporal organization of music. This opens avenues for adapting our teaching methods, allowing us, as teachers, to craft diverse learning environments that accommodate various students' backgrounds and preferences.

As bass teachers, we strive to promote collaboration and ensemble playing among our students by reflecting on bassists' collaborative techniques and their perspectives on various aspects within the temporal organization of music. By introducing diverse viewpoints on aspects such as rhythm and pulse, we aim to emphasize the significance of collaboration in creating a harmonious musical performance and fostering a deeper comprehension of music's diversity.

We believe that the pedagogical value of these insights lies in their application within our teaching practices. It entails designing instructional approaches that mirror these distinct traditions, potentially integrating musical elements from various genres. This cultivates a dynamic environment where students are empowered to explore and express themselves across different musical traditions. By doing so, we, as music teachers, can encourage and support students' creativity and musical development in multifaceted ways.

7.4 Future research
Through our interviews, we have gained insights into the differences among traditions regarding the temporal organization of music. The study has enriched our perspectives and addressed our research inquiries concerning double bassists' conceptualizations of aspects within the temporal organization of music. However, for our findings to have broader impact, a larger-scale study is required. For future research, we propose conducting a study within an orchestra, focusing on the entire double bass section and emphasizing the centrality of the section's collaboration in the temporal organization of music within the orchestra. Similarly, examining a jazz ensemble from the same standpoint would be relevant. However, due to the comprehensive nature of this investigation, we believe it might be more effective to split the study into two separate works. To explore an orchestra's collaboration, employing Communities of Practice (CoP) as an analytical method, we believe, would provide deeper insight and a pedagogical foundation to better understand the temporal organization of music across different traditions.
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**Personal communication**

Håkan Goohde, program director of the Jazz Institution, Royal College of Music Stockholm, personal communication, 10 October 2023.

Karin Hjertzell, program director of the Classical Institution, Royal College of Music Stockholm, personal communication, 10 October 2023.
Appendix

Intervjumall

Introduktion
Vad heter du?
Hur gammal är du?
Vilket/vilka instrument spelar du?
Vad har du för sysselsättning just nu?
Hur länge har du studerat musik?
Vart har du pluggat musik på vilken nivå och linje?

Begreppsdefiniering
Hur skulle du beskriva puls som musikalskt begrepp?

Hur skulle du beskriva din relation till fenomenet puls?

Finns det skillnader i puls eller rytm inom olika musikaliska traditioner och genrer?
  ● Varför? Varför inte? Hur?

Finns variationer i pulsens natur och uttryck inom olika musiktraditioner? Beskriv dessa?
  ● På vilket/vilka sätt? Varför tror du att det är så?

Utbildning
Hur har begreppet puls påverkat eller spelat en roll i din musikaliska utbildning?
  ● Varför/Varför inte? På vilket sätt?

Pratas det om puls och tillhörande fenomen på olika sätt på olika musikutbildningar med olika genreinriktning?
  ● Hur? Varför?

Tycker du att man förhåller sig till musikaliska termer (som puls, rytm, tempo) på olika sätt på olika musikutbildningar och inriktningar?
  ● Hur? På vilka sätt?

Om vi behöver mer förtydligande: Tycker du att man upplever musikaliska termer (som puls, rytm, tempo) på olika sätt på olika musikutbildningar och inriktningar?

Genre/tradition
(Medvetet stängd fråga)
I din musikaliska identitet, identifierar du dig mer inom någon specifik musikalisk tradition? (om de har svårt att svara fråga om genre istället).
Kan du dela med dig av exempel som illustrerar hur dessa traditioner har påverkat ditt musicerande?

Hur tänker du när du musicerar i genres/traditioner som för dig är ovana?

Vilka musikaliska hinder har du mött i sådana situationer?

Hur tar du dig an de hindren?

**Om de gått estet musik på gymnasiet**

Citat plockat från Skolverket, om estetiska programmet inriktning musik- Syfte: https://www.skolverket.se/undervisning/gymnasieskolan/laroplan-program-och-amen-i-gymnasieskolan/gymnasieprogrammen/amne?url=996270488%2Fsylabuscw%2Fjsp%2Fsubject.htm%3FsubjectCode%3DMUS%26date%3D2023-09-28%26lang%3D%26tos%3Dggy&sv.url=12.5dfee44715d35a5c6fa92a3

Undervisningen i ämnet musik ska ge eleverna förutsättningar att utveckla följande:

1. Kunskaper om musik, begrepp och stildrag från olika tider och kulturer.


På vilka sätt fick du under din gymnasietid kunskaper om begrepp från olika tider och kulturer?

På vilket/vilka sätt fick du hjälp att utveckla en förmåga att skapa och arrangera musik för flera ensembletyper?

**Övrigt**

Ge plats för dem att tillägga något om de vill.

Finns det något viktigt inom ämnet puls+genrebredd/tradition du anser att vi har missat?
Samtyckesblankett

Hej! Vad roligt att du vill delta i denna studie! Nedan följer information kring intervjutillfället och ditt deltagande i studien.

Vi heter Ludvig Gawell och Ida-Maria Risfelt och studerar lärarlinjen på Kungliga Musikhögskolan, inriktning elbas. Denna studie kommer behandla *puls* som fenomen i kontexten musikutbildning och musikaliska traditioner.

Undersökningen sker i form av ett intervjutillfälle å 30-45 minuter. Intervjun kommer att spelas in men dina utläsanden är helt anonyma och inspelningen kommer endast hanteras av oss. Det är frivilligt att delta i denna undersökning och du kan avbryta ditt medverkande när du vill.

Kontakta gärna oss om du har några frågor:

Ludvig Gawell                                      Ida-Maria Risfelt

Handledare:                                        
Susanna Leijonhufvud

Nedan behöver vi ditt samtycke att delta i denna undersökning.

Jag har läst och förstått information kring studien och godkänner härmed mitt medverkande. Jag är medveten om att min medverkan är frivillig och kan avslutas när jag vill, att mina yttranden är anonyma samt att resultaten endast kommer att användas i undersökningssyfte.

______________________________  __________________________  ________________________
Datum                             Signatur                                            Namnförtydligande

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Kungl. Musikhögskolan