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Aural awareness in ensemble rehearsals

A qualitative case study of three undergraduate chamber music ensembles playing Western classical music

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Abstract

This thesis aims at understanding the roles and characteristics of aural awareness in ensemble rehearsals, within the contexts of higher music education and Western classical music. The overall idea of the subject area of aural training as a complementary discipline in undergraduate studies, is that it should inform and support performance activities, and lead to aural awareness. For example, one may expect music students to be aurally aware in their unsupervised, curricular ensemble rehearsals. However, the ways in which aural awareness manifests itself in such rehearsals, and how it informs problem-solving processes, has received little attention.

The following research problem is posed in the thesis: *In what ways are undergraduate music students aurally aware during ensemble rehearsals, and how does their aural awareness influence their collaborative efforts to improve their playing?* Two research questions further refine this problem, asking how aural awareness is part of ensembles' problem-solving processes, and what kinds of tools the ensembles share in order to improve their playing. This problem area is explored through a qualitative, collective case study with three student chamber ensembles from the Norwegian Academy of Music. Video observations of rehearsals and focus group interviews have been chosen as data collection methods. Working from a sociocultural perspective, the thesis challenges the assumption that aural awareness is merely an individual phenomenon, and defines aural awareness within the collective learning situation of ensemble rehearsals.

The thesis suggests six kinds of tools that are shared by the students in the ensembles*: activity*, *strategic*, *analytical*, *conceptual*, *interpretative*, and *performing tools*. These tools operationalize aural awareness and mediate the students'

understanding of the music, in ways that inform their efforts to improve their playing. The thesis also suggests that there are different ways of negotiating aural awareness in ensemble rehearsals. A two-dimensional table explains the relations between a scale going from cooperation to collaboration, and a scale going from few or no, to several shared tools, showing four ways of negotiating aural awareness: *expert negotiations*, *complete negotiations*, *incomplete negotiations*, *and personal negotiations*.

The thesis concludes that aural awareness can play the roles as *standby, basis for negotiation,* and *preparation* in ensemble rehearsals. The characteristics of aural awareness in ensemble rehearsals are interpreted as *craftsmanship*, *scholarship*, *and musicianship*. Finally, the thesis concludes that these roles and characteristics of aural awareness in ensemble rehearsals can be seen as an *Aural Awareness Space*.

The findings of the thesis contribute to the field of higher music education by providing tangible examples of how undergraduate students are aurally aware. The thesis as such contributes to the field of research into higher music education by assisting to establish a research field of "aural training pedagogy in musical practice," and by defining aural awareness in a collective learning situation through a sociocultural framework.

Contents

List of figures

List of tables

PART I
FOUNDATION

Vignette

> Some may ask why a musician needs skills in hitting the right notes or in music dictation. A singer obviously has to know how to hit the note, but which need does a string player have for sight singing? Indeed, it's necessary for a string player to be able *to hear the melody for his inner ear before playing* (Lindeman, 1961, p. 7, my translation).

This quote is from one of the first aural training textbooks published in Norway, written by Trygve Lindeman, who was a Norwegian cello player (1896-1979) and a director of the Music Conservatoire in Oslo (Musikkonservatoriet i Oslo) from 1928-1969. Lindeman's emphasis is on individual aural awareneness.

The following comments are collected from the present study, and they exemplify how two of the participants look at aural awareness in ensemble rehearsals. Their emphasis is on collective aural awareness:

> One has to use the ears in order to call it ensemble playing—ensemble is after all about playing together (cellist, the clarinet trio).

> I think we somehow constantly use our musical ears when playing together. We can't just sit there, playing, and not use our musical ears (violinist, the piano trio).

1 Introduction

1.1 Tuning in

Listening is central to performing music. On a comprehensive level, this thesis explores how to listen as a performer and perform as a listener. On a concrete level, it explores how undergraduate classical music students are aurally aware during the ensemble rehearsals that are part of their curriculum activities. Scholars in the fields of both aural training pedagogy and music education hold the view that there is an important connection between listening and performing, though the two fields approach the subject from different perspectives and underlying belief systems. Karpinski (2000), a proponent of aural training pedagogy says: "Listening skills are essential to musicians because music exists fundamentally in the aural domain. It is important that musicians develop *musical* listening skills" (p. 6, italics in original). Karpinski's concern is individual mental processes, and as I understand him, he describes listening skills as a *prerequisite* for performing music.

Within the field of music education, Elliott (2005) discusses music-listening abilities and their importance within education drawing a more explicit connection to musical performance: "I suggest […] that the performing art of music […] depends on a multidimensional form of understanding called musicianship that always includes music-listening abilities, or what I call 'listenership'" (Elliott, 2005, p. 9). One of several activities Elliott suggests is engaging the students in "performing-and-listening" (p. 7). His hyphenated phrase links listening literally to the performance of music. In Elliott's view, therefore, performance *depends*

on good listenership. Nielsen (1998) claims that all musical activity requires listening in some way (p. 313). His assertion is similar to those of Karpinski and Elliott, but the argument is turned around: according to Nielsen, the performance of music as such *calls for* listening. In other words, whether defined as a prerequisite skill, as listenership needed for musical performance, or as a consequence of musical activity, listening is described as inevitable and omnipresent when performing music. How can this be so?

One characteristic of musical performance is that musicians are at once both performers and listeners. Their attention is directed both towards creating a good performance and at assessing their own playing. Listening to one's own performance therefore involves evaluation of two sound sources: the "produced sound" in the room and the "imagined sound" in each musician's mind.[1] The produced sound is available in the room, although musicians may experience produced sound differently. The imagined sound, on the other hand, is essentially individual. Though existing only in the individual mind's ear, imagined sound has an impact on a performance because it affects how a musician plays.[2] Together, the produced and imagined sound sources appear in three ways: as present sound—the sound being produced at any given moment—and as past and future sounds. Gordon (2012) has described these different dimensions of music listening in relation to his concept of "audiation":

> […] when you are listening to music, you are giving meaning to what you just heard by recalling what you heard on earlier occasions. At the same time you are anticipating or predicting what you will be hearing next based on music achievement. In other words, when you are audiating as you are listening to music, you are summarizing and generalizing content of music patterns in the context you just heard as a way to anticipate or predict what will follow (Gordon, 2012, p. 5).[3]

The present thesis investigates listening in a particular musical performance context: ensemble rehearsals in higher music education, within the tradition of Western classical music. Assessment of one's own performance is salient in

1 Nielsen (2012) talks about "the acoustic layer" of meaning in music. This may be parallel to the concept of "produced sound." Pratt (1998) uses the term "imagined sound" in relation to sounds "inside your head" (p. 107).

2 I use the expression "in the mind's ear" to mean imagined sound, and it will be used henceforth to describe something we hear in our imagination. It is parallel to the expression "in the mind's eye," which means something we see with our imagination.

3 In this thesis Gordon's (2012) concept of "audiation," as described in chapter 1 of the cited book, is used to underline some premises providing thoughts on listening. His compound worlds of ideas are not taken into account.

rehearsals. According to Gordon (2012) listeners are always predicting what will come next. However, when ensemble musicians listen to the music's future, they not only anticipate; but they also make decisions about how they are going to play. Ilomäki (2011, p. iii) makes the same point when she says that "people's 'inner hearing' of music is based on their ability to anticipate consequences to musical actions." To give an example: a chamber ensemble is playing and a tempo change appears in measure 25. The composer has suggested a *ritardando* leading to this transition. At the point when the musicians start the *ritardando* they need an idea of how it is going to end—that is, they need to imagine the tempo at measure 25—and this, in turn, affects how much they slow down on the way. This is what I mean by "listening to future sounds": the slowing to a target tempo in the future must begin with the musicians imagining the sound of that future tempo. Hence, listening to the music's future offers the musicians power to *influence* the produced sound to come.

There is a complex interplay between the available sound sources (produced and imagined sound) and the different dimensions of the sound (past, present, and future). Gordon (2012) relates performing in ensemble to his concept of "audiation":

> Obviously, it is more difficult for ensemble players to audiate what other ensemble players are performing concurrently than to audiate their own part. However […] audiation is a matter of concentrating on one set of musical sounds while at the same time attending to or performing one or more sets of other musical sounds (Gordon, 2012, p. 6).

Gordon is pointing to a basic challenge within ensemble rehearsals: that of simultaneously performing and listening, and simultaneously having an individual (personal) and a collective (ensemble) focus. I will refer to this particular type of performing-and-listening, along with the attentiveness it requires as "aural awareness in ensemble rehearsals."[4] Regarded as an isolated phenomenon, aural awareness can be connected to people's cognition (i.e. how to perceive and mentally handle aural impressions) and to an individual view of learning and knowledge production (i.e. how to enhance personal listening skills), which means aural awareness has some psychological connotations; both the "aural domain" and the "awareness domain" are essentially individual and personal. However, in this thesis the concept of aural awareness is to be discussed in relation to ensemble rehearsals, from a sociocultural approach. This

4 The concept of "aural awareness" is borrowed from Pratt (1998). See 3.3.

requires some considerations, since cognitive and sociocultural approaches to learning are different.

When investigating a musical practice that involves more than one person, it is important to recognize the conditions specific to this practice. Ensemble rehearsals are collaborative in nature: the ensemble must always consider each individual group member, while the individual group members must consider the ensemble. A final agreement or compromise is reached through all members contributing their own ideas, and hearing and respecting the ideas of the others. Hence, "ensemble music-making is an obvious example of collaborative learning in music" (Lebler, 2013, p. 114). A salient assumption underpinning the notion of collaborative learning from a sociocultural perspective is that meaning must be negotiated in some way between members of the ensemble. Few chamber ensembles start out with common and clear decisions about how to perform a piece. These are negotiated through verbal and musical communication over the course of the rehearsals. From this point of view, listening must be a central part of negotiations, as each group member makes personal aural observations for the benefit of the improvement of the common musical performance.

Hence, an ensemble's aural awareness can be seen as collective, at the same time as the individual plays an important role. Ludvigsen, Lund, Rasmussen, and Säljö (2011, p. 3) emphasize, "there is a need for better understanding of learning processes at the individual as well as the collective level" when discussing learning in the twenty-first century. Furthermore, they emphasize that the sociocultural approaches have had a great impact in recent decades. In this study, this means not excluding aural awareness at the individual level; on the contrary, each individual musician makes important contributions to the ensemble by bringing his or her personal knowledge resources. However, from a sociocultural point of view, it is crucial to take into account that the knowledge resources that the individuals possess are culturally brought forth, and that they are further negotiated and developed as they are shared through social interaction.

The above reasoning took as a starting point that listening is central, omnipresent, and inevitable when performing music. From there it moved through primarily individual perspectives on listening, such as how musicians relate to available sound sources (produced and imagined sound) and different dimensions of the sound (past, present, and future), and to collective perspectives on listening, taking into consideration that ensemble rehearsals naturally elicit

communication, collaboration, negotiation, and sharing of knowledge. In combination, these individual and collective perspectives point to questions about what it actually means to be aurally aware during ensemble rehearsals, and how aural awareness can contribute to a collaborative learning process. This is the research focus of the present thesis.

1.2 Research topic and aim of the study

The research topic of the present thesis is *aural awareness in ensemble rehearsals.* I focus specifically on the strong ties between performance and aural awareness, which are especially salient in rehearsals. The way in which aural awareness manifests itself in rehearsals and how it informs problem-solving processes has received little attention, in particular from a sociocultural point of view.

In higher music education, the development of aural skills and the development of collaborative performance skills are often delegated to two different teaching departments, with the result that possible mutual benefits are not fully explored. This problem is identified and examined in a teacher's report on the chamber music subject area, written at the Norwegian Academy of Music (NAM):

> In higher music education, the students' main instrumental teachers are traditionally the ones giving lessons in chamber music. From experience, we know that music scholarship, be it knowledge in music history, different composition techniques, or aural training, is integrated in the teaching of chamber music to a small degree. Hence, the students themselves must provide the integration of that knowledge and those skills they have acquired in these different subjects (NAM, 2007, p. 4, my translation).[5]

We know even less about aural awareness as part of the students' ensemble *rehearsals*, which are unsupervised. This is what the present study sets out to investigate. The findings are meant to provide building blocks for the *bridge* between aural awareness and musical performance. In this respect, the thesis addresses students, teachers, and performers. It is hoped that the findings will prove useful beyond ensemble rehearsals, contributing to building a bridge between aural awareness and musical performance more generally. There is a need to expand our understanding of the concept of aural awareness in relation to performing music.

5 See appendix 1 for original Norwegian.

In sum, the overall aim of the study is to understand the roles and characteristics of aural awareness within ensemble rehearsals in higher education. Moreover, my motives for doing this project is to contribute to the efforts of improving connections between the different subjects in higher music education, and to look at ensemble practice at NAM in relation to the comprehensive, curricular aim: "educating competent and independent musicians who take responsibility for their artistic and creative development" (NAM, 2013a, my translation).

1.3 Problem and research questions

On the basis of the proposed aim for the research study, outlined above, I pose the following comprehensive problem:

In what ways are undergraduate music students aurally aware during ensemble rehearsals, and how does their aural awareness influence their collaborative efforts to improve their playing?

The concept of "aural awareness in ensemble rehearsals" will be discussed briefly in 1.4, and in detail in 3.3. I turn now to other aspects of the problem formulation.

Undergraduate music students in higher education are in the center of this research study because they are neither fully qualified as experts, nor novices. They are in a learning process by virtue of their studies, and it is likely they therefore spend more time on verbal discussions in the rehearsals, and express more of their thought processes than experienced musicians do.[6] Higher music education is also a place in which undergraduate students receive professional input from different teachers, which might provide a wide variety of ideas in the rehearsals.

In the present study, the focus is on ensembles. Each undergraduate student participating in the study is a member of an ensemble, and individual contributions are always seen in relation to the collective. Ensemble *rehearsals* have been chosen because they do not involve teachers instructing the students, which makes it possible to observe the ways in which the ensembles engage in self-instruction. This is interesting with a view to the curriculum of the chamber

6 See for example Williamon and Davidson (2002), who found that the professional musicians in their research study used over 90% of their rehearsals for playing.

music course, which sets out to prepare the students for the "real world". Another reason for focusing on ensemble rehearsals is that the necessary verbal and non-verbal communication taking place in such a contact can provide rich data.

The research problem posed above can be further refined and articulated in two research questions, the first of which focuses on how the ensembles are aurally aware and the second of which focuses on how their aural awareness influences their playing:

1 How is aural awareness part of the ensembles' problem-solving processes?
2 What kinds of tools are shared in order to improve the ensembles' playing, and how?

Both research questions take as a starting point that negotiation is a salient feature of collaborative learning, and that rehearsals are problem-solving oriented in nature. The concept of constructing and maintaining a "Joint Problem Space" (Roschelle & Teasley, 1995) will therefore be central when answering the first research question, as Roschelle and Teasley focus specifically on the *process* of collaboration, and how groups solve problems through a shared conceptual space. The second research question focuses on how tools, as described by Vygotsky (1978, 1981) and further developed by Wertsch (1998, 2007), are shared in the ensemble.

1.4 Key concepts

In this section, I introduce three key concepts central to my research questions: "aural awareness in ensemble rehearsals," "Joint Problem Space," and "tools."[7] The aim here is therefore to explain the concepts briefly so that the reader can understand the theoretical scope of the research questions. A thorough discussion of the concepts is to be found in chapter 3.

7 The concept of "aural awareness in ensemble rehearsals" has been shortened to "aural awareness" in the two research questions, because the questions already comprise the ensemble dimension. When this particular shortening is done elsewhere in this thesis, it is always based on the full-version definition provided in 1.4.1 and in 3.3.3.

1.4.1 Aural awareness in ensemble rehearsals

In my introductory reflections to this chapter, I discussed listening in relation to performing in ensembles, and I concluded that this type of performing-and-listening would be referred to as "aural awareness in ensemble rehearsals" in the present thesis. As proposed in the problem above, I set out to investigate in what ways undergraduate students are aurally aware during ensemble rehearsals, and how their aural awareness influences their collaborative efforts to improve their playing. The collaborative aspect of ensemble rehearsals forms the basis of this research study's design, both in terms of the chosen theoretical perspectives and in terms of how I pose the research questions. The comprehensive problem and the two research questions are all framed to facilitate an understanding of aural awareness in ensemble rehearsals through a sociocultural approach. I start from the assumption that learning is situated in a cultural and historical context, and that knowledge resources are collectively brought forth and further developed through human communication. Hence, the concept of aural awareness in ensemble rehearsals is also defined in the light of a sociocultural understanding. Moreover, it is defined by taking into account the collaborative, negotiating, problem-solving, and aural characteristics of ensemble rehearsals. Based on these considerations I suggest the following definition:

The concept of aural awareness in ensemble rehearsal refers to the ensemble's attentiveness, the sharing of ideas from their mind's ears, and the utilization of available knowledge resources, in the process of assessing a musical performance and deciding how to play.

In the brief and introductory discussion of the concept offered in this chapter, I will focus on a single aspect: the differences between what I call a "concert type" and a "rehearsal type" of aural awareness. The most important difference between these is in the way aural awareness is negotiated in the two musical contexts: in rehearsals, one can use both verbal and non-verbal communication—on a concert stage one can communicate only non-verbally. In a concert, there is no time for deep reflection, and the listening focus is directed to musical fluency and synchronization with the other players (perhaps trying to do what was decided during the rehearsals about tempo changes and so on). However, each player must be alive to the possibility that the ensemble, or rather the music, may take unplanned turns in the moment. Concert type aural awareness can therefore be described as sensitive and open to the unexpected. In rehearsals, on the other hand, there is time for discussion about what one is hearing and for problem-solving, as well as time to repeat a musical excerpt until all are

satisfied. The rehearsal type of aural awareness therefore can be described as critical and reflective. The difference between these two types of aural awareness has been taken into consideration in my definition of the concept of aural awareness in ensemble rehearsals.

1.4.2 Joint Problem Space

In my first research question, I ask how aural awareness is part of the ensembles' problem-solving processes. This question is informed by the way the concept of "Joint Problem Space" (JPS) is described by Roschelle and Teasley (1995). Their aim is to examine "the construction of *shared* knowledge in collaborative problem solving" (p. 73). Hence, they focus specifically on the *process* of collaboration, not just its outcome.

A Joint Problem Space is a shared knowledge structure that supports problem-solving activity. Hence, a JPS is a shared conceptual space that is negotiated through collaborative problem-solving and "constructed through the external meditational framework of shared language, situation and activity." (p. 70). This approach is part of the overall sociocultural framework of the present research study.

When the concept of JPS is elaborated in 3.2.6, I will describe more deeply Roschelle and Teasley's definition of collaboration, the different components that are integrated in a JPS, and also how construction and maintenance of a JPS can be part of the ensembles' problem-solving processes.

1.4.3 Tools

In my second research question, I ask what kinds of tools are shared in order to improve the ensembles' playing, and how. As described by Vygotsky (1978, 1981) "tools" have mediating functions. The concept of mediation is thus the crucial and connecting link between a tool and a subject, and a mediating tool is the crucial link between a subject and an object. This configuration is often described in a triangle (see Säljö, 2006, p. 28). Hence, as a starting point, I view as a tool anything that mediates the students' aural awareness and collaborative efforts to improve their playing. I refine the definition of tools, by arguing that nothing is a tool when it is not actually being used (Wertsch, 1998). This implies that tools have no fixed meanings. Rather, they have different potentials within different actions (Wertsch, 1998). In the present study, this means that the

tools receive their meaning through the process of collective negotiation in the ensemble rehearsals.

In order to lighten the language in the thesis I have decided to simply use the term "tools," with the implicit understanding that such are culturally developed, with a mediating function, and potentially with both physical and psychological aspects (Säljö, 2001, 2006). This approach will be discussed further in 3.2.3, along with an elaboration on the contributions of Vygotsky and Wertsch.

1.5 Personal background and researcher role

When I was a little girl, I often sat in the living room couch with my father and listened to marches performed by military bands. I remember liking the marches and the pictures on the covers, but I also remember my father giving me the important task when a new march began of finding the first beat in each bar! I counted and conducted, and gradually became quite a young expert in finding the first beats in military marches.

I believe this was one of the first times I was made aurally aware of a specific musical element. My interest in aural awareness was further developed when I started playing the piano as a 9-year-old, and my piano teacher encouraged me to play by ear. I remember that I listened to pop tunes on the radio, recorded them on a cassette, and then sat down by the piano trying to play the melody and the chords by ear. I also played the clarinet, and in my teens I attended summer camps arranged by the Norwegian Band Federation, in which aural training was a mandatory part of the courses. In high school, I chose music as the line of study and in addition to playing the piano, aural training was one of the subjects that interested me the most. This finally led me to the Norwegian Academy of Music (NAM), where I trained as a music teacher and earned a master's degree in music education with a specialization in aural training. My personal engagement in aural awareness has therefore always been linked to performance. As a piano teacher for children I have made aural awareness an integrated part of my teaching, and this was also the topic of my master's thesis (Slette, 2007).

I have also gained experience from being an aural training teacher at NAM, both in the educational program for talent development and in undergraduate studies. Although I am not currently teaching aural training at NAM, the fact that I have taught there, presents some challenges to me as I conduct research

in my own field at 'my own' institution. As a previous student, I have experienced aural training at NAM from a student's perspective. As an aural training teacher, I have been a mediator of the subject, and discussed the subject with colleagues. This means I know the aural training courses at NAM from the inside, and from different perspectives, and my experiences affect my preconceptions and prejudices as a researcher. However, as long as I remain aware of these preconceptions and prejudices, they might also be useful. Gadamer (2003) describes *prejudices* as "conditions of understanding" (p. 277), meaning that any understanding has a starting point in a previous understanding. In the present research study, I can investigate aural awareness in ensemble rehearsals *because* I have previous understandings of how aural training is taught at NAM. That means my prejudices themselves can help to qualify me to carry out the research project. However, it has been challenging to move from an "insider role" to a deliberate "outsider role." Within the chamber music subject area, the move from insider to outsider is less recent. I participated in different chamber ensembles, when I was a student at NAM, and therefore have experiences from ten years ago, but I am not a natural "insider" now.

1.6 A reflexive research study

This is a reflexive research study. According to Alvesson and Sköldberg (2009) reflexive research has two basic characteristics: careful interpretation and reflection (p. 9). Alvesson and Sköldberg do not claim to hold monopoly of this view, they rather state that all research could be characterized by interpretation and reflection, but that it is often toned down: "Interpretation is normally treated as a limited element, taking place after the data have been gathered and categorized. Reflection is seldom mentioned and is normally constrained to technical matters and in relation to conclusions" (p. 14).

Alvesson and Sköldberg's description of "careful interpretation" implies that all references to empirical data are the results of interpretation (p. 9). Or put another way: "there is no such thing as unmediated data or facts" (p. 12). From an ethical point of view, thoughtfulness about interpretation of the empirical data is crucial in respect of the participants in the research project. I would also argue that it is extremely important that a researcher pays attention to the constant interpretation that goes on in a research project, even before the

data collection begins or before the research questions are posed.[8] Moreover, Alvesson and Sköldberg claim that "[…] interpretation does not take place in a neutral, apolitical, ideology-free space. Nor is an autonomous, value-free researcher responsible for it" (p. 12). They recommend the utmost awareness of the researcher's preconceptions.[9]

The second basic element of reflexive research, according to Alvesson and Sköldberg is "reflection," defined as interpretation of interpretation and critical self-exploration (p. 9). They claim that reflection "turns attention 'inwards' towards the person of the researcher, the relevant researcher community, society as a whole, intellectual and cultural traditions," as well as the "form of presentation" (p. 9). In the present study, my experience is that such systematic reflections have been of benefit to the research process.

To summarize: Alvesson and Sköldberg (2009) relate reflexivity closely to an interest in how we *construct* research—including the research object that is constructed, the constructing researcher, and the social context that constructs the researcher (p. 269). Furthermore, they claim that reflexivity "means paying attention to these aspects without letting any one of them dominate" (p. 269). In practice, this means it is the researchers' responsibility to be aware of all these aspects by constantly asking ourselves critical questions.

In the present research study, I have used the reflexive approach to maintain a constant panoramic view on the research project and the research process. That means I experience the reflexive research approach as a mindset—a particular way of *thinking* research. This mindset demands a systematic, critical, and self-reflective researcher. During the research process I have often tried to look at the research project and all its components in a bird's-eye perspective, with an aim of critiquing the data, the theory, my analyses, and the educational-political context, as well as my textual presentation. Thus, as one of my colleagues has put it: "To sum up, reflexivity holds my research project together" (Stensæth, 2008, p. 52).

In these introductory considerations about reflexivity, I have used the term "reflexive research." The reader will also encounter the companion term "reflexive interpretation" in this thesis, in particular in chapter 4. Alvesson and Sköldberg (2009) use both the terms, as well as "reflexive methodology." Based

8 See also chapter 4, in which I refer to Kvale and Brinkmann (2009) who talk about interpretation as-you-go (p. 190).

9 See also 1.5, in which I discuss my preconceptions as a researcher.

on my understanding of their distinctions, I use "reflexive research" or "reflexive methodology" as a term describing how the researcher approaches the research task in its entirety, while "reflexive interpretation" is used as a term describing how the researcher approaches the interpretation of data. Yet, the latter approach of the data also has a comprehensive character: "Using the term *reflexive interpretation*, we have sought to formulate a reasoned, comprehensive qualitative methodology (or meta-methodology) (Alvesson & Sköldberg, 2009, p. 317).

1.7 Delimitations

The present research study explores aural awareness in ensemble rehearsals, in the context of higher music education, and within the tradition of Western classical music, focusing on compositions from the nineteenth and early twentieth century. As in any other study, this research scope has its delimitations.

The present thesis does not address aural awareness in the context of contemporary music, which involves other kinds of challenges, requiring the musicians to listen, reflect, and play differently than in Western classical music. Moreover, this thesis is about music students, and does not address how the topic would be elucidated by professional musicians. It is about ensembles—and not about individual rehearsing. Finally, it is about the aural awareness aspect of ensemble rehearsals, and does therefore not take into account social or organizational aspects of ensemble rehearsals in the general sense.

I acknowledge, of course, that rehearsals are about much more than aural awareness. Among the topics not addressed here are instrumental technique and technical challenges. I know that technical difficulties sometimes can be in the way of musical expression. Hence, an ensemble might be aurally aware of a problem, and have an idea of an ideal performance in their mind's ear, but the instrumental technique is simply not adequate to realize this ideal. The present thesis does not focus specifically on such instrumental and technical challenges.

I also acknowledge the unpredictability of performing music; I recognize that it might be difficult to perform music the way one pictures it—difficult to bring in musical nuances, to express a certain character, or to play a passage. I also respect the complex and somewhat fragile process of rehearsing music in small ensembles, with a concert deadline by the end of the semester.

1.8 Design and outline of the thesis

The present research study is designed as a case study with three participating chamber ensembles from the Norwegian Academy of Music, with data mainly collected through video observations and focus group interviews.

The thesis unfolds in three parts:

Part I constitutes the foundation of the study, and consists of four chapters starting with an introduction (chapter 1) in which this outline is the last paragraph. Chapter 2 defines the research field, while chapter 3 discusses a socio-cultural perspective on aural awareness in ensemble rehearsals, illuminated by two main topics: (i) learning in ensemble rehearsals, and (ii) aural awareness in a collective learning situation. Chapter 4 concerns methodology.

Part II comprises within-case-displays of the three cases, and consists of three chapters. Chapter 5 is about case A: the string quartet, chapter 6 is about case B: the clarinet trio, and chapter 7 is about case C: the piano trio.

Part III comprises cross-case-display, discussions and conclusions. Chapter 8 and 9 discuss cross-case-findings and provide an overall discussion of the findings. Chapter 10 offers concluding remarks, as well as a discussion of the study's potential contributions.

2 The research field

In this chapter I will describe aural awareness in ensemble rehearsals as a research field from three different viewpoints: by discussing higher music education as the research context of the study, by discussing the Norwegian Academy of Music (NAM) as the empirical context of the study, and by reviewing relevant literature.

2.1 Higher music education as research context

Higher music education constitutes the research context for the present study in several ways: (i) the participating ensembles consist of undergraduate students, (ii) the participating ensembles are formally connected to a chamber music curriculum, and (iii) the concept of "aural awareness," or adjacent concepts such as "aural skills," can be connected to the competence that is often developed in the aural training courses in higher music education.

Higher music education is a relatively new term for undergraduate music education programs in Norway, and the traditions from the previous "music conservatoires" are still alive.[10] Nerland (2003) has described music conservatoires as having a specific educational culture; mainly occupied with Western classical music and its aesthetic values and standards (p. 28). Although today the Norwegian Academy of Music offers educational programs in subject areas

10 The term "music conservatoire" comes from central Europe around the seventeenth century, and was used in Norway; however, in Oslo the name was changed to the Norwegian Academy of Music in 1973, and the other music conservatoires in Norway have become departments of larger universities in the past 20 years.

outside this circumscribed area, the characterization is valid for the "classical" departments, and hence for the present study. This is partly because the master–apprentice tradition still has a powerful hold on teaching in the area of performance in higher music education, and hence constitutes a cultural or social practice (see Nerland, 2003; Nielsen & Kvale, 1999). It also has to do with the strong emphasis on Western classical music in the education programs, both in terms of the admission requirements (NAM, 2013b) and in terms of the standard repertoire the students choose or are encouraged to play. The three ensembles participating in the present study are all playing what are considered as standard repertoire; chamber works by Shostakovich, Mendelssohn, Brahms, and Dvořák. Aural training as a subject taught to students of classical music, is also part of this culture, because its content is heavily based on the structure and characteristics of Western classical music.

In the following sections, I will briefly present some historical perspectives on chamber music and aural training as components in higher music education.

2.1.1 Chamber music as a performance subject

Chamber music is usually a mandatory performance subject in higher music education and is strongly connected to chamber music as a musical form. Hence, it has also become an obvious part of the curriculum in higher music education:

> Chamber music constitutes an important part of the concert repertoire in today's society and is therefore central to many professional musicians. Most of the higher music education institutions therefore offer their students lessons in chamber music (NAM, 2007, p. 4, my translation).[11]

As a musical form, chamber music was developed in the eighteenth century, continued in the nineteenth and twentieth centuries, and is placed between the large musical forms of the symphony orchestra and the small musical form of individual performance. Chamber music as a subject is evolving quickly in Europe, supported in part by ECMTA—the European Chamber Music Teachers' Association—founded at the beginning of the twenty-first century. ECMTA is a network devoted to enhancing the visibility and image of chamber music teaching and performing both in the musical community and among social, cultural, and political actors on the European scene. According to ECMTA, "The

11 See appendix 1 for original Norwegian.

advantages of Chamber Music have not been fully utilised yet, because in many cases its education has not been properly organized" (ECMTA, n.d.).

In addition to enhancing chamber music teaching, there are opportunities to connect chamber music to other subjects in higher music education curricula. An example of this will be presented in the next section.

2.1.2 Aural training as a complementary subject

Among the many subjects in higher music education that might contribute to musicians' aural awareness, aural training subject is central. Aural training for classical music students is usually a mandatory, complementary, and separate subject in undergraduate studies, with a focus on developing aural skills.[12] As a subject, aural training arose, paradoxically, as a result of the introduction of notation: suddenly there was need for learning melodies in a fast and reliable way (Blix & Bergby, 2007, p. 7). Because students needed to train their inner ears, sometime during the seventeenth century conservatoires started to divide the tuition into different subjects, and one of these changes involved separating the aural training subject from musical practice (Blix & Bergby, 2007, p. 10).[13] In Norway, the aural training subject was formalized as part of a curriculum when the Organist school in Christiania, the precursor of the first music conservatory in Norway, was established in 1883.

The aural training subject is now undergoing development. In the past years, there has been an increased focus on how aural training and musical practice can be better integrated. For example, at NAM, the use of students' instruments in aural training lessons has been gratefully received by the students. Playing their instruments in aural training class give them firsthand experience with the ways their aural awareness functions in action. There are also examples of aural training being part of multidisciplinary subjects in higher music education. At the Royal Northern College of Music (RNCM) in Manchester, UK, there is a subject called Musicianship, "which includes how to improvise and build on your aural awareness" (RNCM, 2012). At NAM there is an elective chamber music subject run collaboratively by teachers in performance, aural training, music theory, and music philosophy. In an evaluation report of this subject, one

12 The names of these courses vary from country to country (see Ilomäki, 2011, p. 12). The content, teaching methods, and length of the courses also vary.

13 For an extensive description of the historic development of the subject aural training, see Blix and Bergby (2007, pp. 7-14) and Ilomäki (2011, pp. 11-18).

of the aural training teachers made a comment illustrating how it feels to teach 'regular' aural training compared to teaching aural training as part of the elective chamber music subject:

> Earlier I was teaching aural skills strategies feeling like I was in a laboratory. Now I can follow the process all the way to the audible result. It feels like I have been going from buttering the baking tin, to mixing the ingredients, baking and decorating the cake—and in the end I even get to eat it! It is very inspiring to teach this way! (NAM, 2007, p. 13, my translation).[14]

This is evidence that—in some institutions at least—the aural training subject is abandoning what one might call the one-sided focus on identifying pitches and durations (see Pratt, 1998, p. 2), and instead, turning the focus to making aural training relevant to musical practice. However, *teaching* the aural training subject in new ways does not mean we know how the students are aurally aware in their different musical practices. This is what the present study sets out to investigate, by looking at ensemble rehearsals as one such musical practice.

2.2 The Norwegian Academy of Music as empirical context

The present research study is carried out at the Norwegian Academy of Music (NAM). The participants are studying, among several subjects, two specific courses to which this study relates: chamber music and aural training. This thesis will not specifically investigate or discuss the content and ways of organizing these two courses, but the subjects do implicitly impact the research study as part of the empirical context. Chamber music's impact is formal, as it is the curriculum framework for the ensembles' rehearsals; aural training has an informal impact, because the participants may associate aural awareness with this subject. I will now present the courses briefly as they appear in the curricula at NAM.

2.2.1 The chamber music course

Chamber music is a mandatory performance course for both the performance and the music education students at NAM, in all the four years of their

14 See appendix 1 for original Norwegian.

bachelor's studies. However, the responsibility of organizing the ensembles and making progress in the course is, to a considerable extent, left to the students (NAM, 2010). First, they choose with whom they want to create an ensemble and what repertory they want to play. The groups can be established across grades if desirable. Next, they report this to the administration, who assigns a chamber music teacher. It is then up to the students to arrange rehearsals and to get in touch with their teacher. It is also the students' responsibility, according to their curriculum, to give a concert each semester, and to report their chamber music activity to the administration.

The aims for the chamber music course were the same within the two different curricula relevant for the participants in the study.[15] The aims were also the same for the different classes relevant for the participants in the study.[16] The aims were described as follows:

> By working with this subject, the student shall:
>
> - develop the ability to perform chamber music in an interesting and personal way, with a sure feeling
> - acquire insight into interpretational characteristics connected to different combinations of instruments
> - develop constructive and creative attitudes to collaboration and rehearsal techniques within a chamber music group
> - acquire a variety of chamber music repertoire
> - gain concert experience as a chamber musician
>
> (NAM, 2008; 2010, my translation).[17]

These aims were the same in all of the four years, and they all emphasize performance, repertoire, and interpretation in particular. However, the third aim points at the development of constructive and creative attitudes to collaboration and rehearsal techniques. This aim is elaborated in a compendium (Sandbakken, 2003) that all the undergraduate students receive in the beginning of their studies. This compendium comprises the following themes (my translation): "I. Personal preparations" (e.g. how to rehearse your own part), "II. The chamber music rehearsal" (e.g. rehearsal techniques, communication advice, attention towards elements such as intonation, "III. Between the rehearsals" (e.g. general planning, how to solve conflicts), "IV. The concert" (e.g. preparing the scene and creating a positive atmosphere before entering) and finally "V.

15 Bachelor's in Performance and Bachelor's in Music Education.

16 The piano trio and the clarinet trio followed the 2008 versions of the curricula, and the string quartet the 2010 version.

17 See appendix 1 for original Norwegian.

Administrative work" (e.g. the planning of program and rehearsals, economy and PR). The compendium written by Sandbakken (2003), with its clear advice, both supplies and expands the curriculum described above, by saying in a down to earth way what playing in a chamber ensemble is all about.

2.2.2 The aural training course

Aural training is a mandatory and complementary course at NAM, taught three semesters to musical performance students and four semesters to music education students. The first year course focuses on basic skills and knowledge concerning rhythm, harmony, melody, and aural analysis. In the second year, the performance students use their instruments in the aural training lessons, focusing on imitation, playing by ear, intonation, and so on, in addition to a further development of skills learned in the first year. The music education students continue with one more year of aural training, in which they have a special focus on how to teach aural training in different teaching practices.

For the purposes here, I need not go any more deeply into the curriculum of the aural training subject. However, I will comment briefly on two aspects I have noticed about the aural training subject. These are central clarifications of how I, as the researcher, view the aural training subject, and they therefore have an impact on the present study. The first aspect is that some musicians and music students talk about their aural abilities as something they simply possess or do not possess; either one has a good ear or one does not. This assumption is often related to whether a person has perfect pitch or not. In this thesis, I do not call attention to the phenomenon of perfect pitch at all, because I do not consider perfect pitch to be a deciding factor when discussing the ensembles' aural awareness. The second aspect, is that I have noticed that many music students at NAM talk in terms of whether they are good or bad at "aural."[18] This attitude is based on their success in the aural training course as such. In the present thesis, the aural training subject at NAM is not part of the investigation, which means that aural awareness is considered to be something that can be understood without reference to performance in aural training courses.

18 Cargill and Pratt (1991) also refers to this phenomenon of "… feeling that everyone is better at aural than you are.." (p. 22).

2.3 Literature review

Previous research literature about the topic of this thesis may relate to ensemble rehearsals, aural awareness, or, preferably, a combination of these. Relevant research may also relate to concepts adjacent to ensemble rehearsals, such as performance, and concepts adjacent to aural awareness, such as aural skills. This chapter therefore comprises two sections, in which the literature scope is slightly expanded: i) a review of relevant research literature on ensemble rehearsals and ensemble practice, and ii) a review of research literature about aural awareness/aural skills in relation to performance. In both sections, the selected literature is contextualized through higher music education studies and/or studies of professional musicians.

The aim of this literature review is to present studies showing what is known about the two topics, in order to clarify how the present research study relates to previous research.

2.3.1 Ensemble rehearsals

In this section, the understanding of ensemble rehearsals is extended to concern several dimensions of classical ensemble playing, such as rehearsing, performance, and ensemble as a cultural practice. Relevant research literature was defined as studies concerning musical, collaborative, and communicational aspects in particular.[19] The search results can therefore be divided into two categories: studies within an educational context (focusing on students) and studies within a professional context (focusing on professional musicians).

Studies within an educational context

King (2006) has investigated the collaborative aspects of ensemble rehearsals. In a case study with three participating undergraduate quartets (winds, saxophones, and strings), she asked what team roles are manifested by student

19 When searching for relevant research literature I have used an extended variety of search terms (rehearsing, performance, practice, chamber music, string quartet and so on). The methods in use have been online searches in databases and research journals, searches in the library database, as well as the snow-ball-effect of exploring the reference lists in articles and literature.

musicians in quartet rehearsals, and how team-roles impact on group-work, including rehearsal progress, group dynamics, and performance (p. 266). King found eight different kinds of roles: "leader, deputy-leader, contributor, inquirer, fidget, joker, distractor, and 'quiet one' "(p. 262). She also found that these roles often changed during and across the rehearsals, and that ensembles with a regular leader exhibited more stable team-role behavior, a focused group dynamic, and better progress than those without a regular leader (p. 262).

Davidson and Good (2002) has investigated the social and musical co-ordination between members of a string quartet. In this case study they followed one undergraduate string quartet in rehearsal and performance, focusing on factors influencing the group's preparation and presentation for the concert program (e.g. gender roles and performance anxiety), as well as moment-by-moment issues connected with the co-ordination of musical content and process (p. 198). They found that there were many factors influencing the functioning of such an ensemble, for example personal concerns about particular social dynamics within the group and performance anxiety worries (p. 186). The results concerning co-ordination of content showed that the group focused on "technical aspects of the performance related to stylistic and structural features of the music" and that process issues were concerning matters such as "entries and exits, expression, and dynamics in the music" (p. 199). Moreover, and of special interest for the present study's topic, Davidson and Good specifically points out a single musical issue which dominated much of the interaction; tuning—"a group and personal dissatisfaction with the overall musical sound" (p. 197).

King (2006) describes team-roles that can be recognized in any study of ensembles, and Davidson and Good (2002) point at performance anxiety worries as an important, and perhaps underestimated, factor within student ensembles. Both these studies confirm that social and organizational aspects of ensemble rehearsals are investigated to some degree. This leaves room for other researchers to study more specific musical aspects of ensemble rehearsals. In this respect, the results from Davidson and Good's (2002) study concerning the co-ordination of content is somewhat closer to the research focus of the present study. Here, there is a research space opening up for going even more in-depth of the process issues that they address, being matters such as "entries and exits, expression, and dynamics in the music" (p. 199). The present study will go deeper into the musical processes in student ensemble rehearsals through the ensembles' aural awareness.

Studies within a professional context

Williamon and Davidson (2002) have examined two expert pianists rehearsing piano duets, focusing on their non-verbal communication. First of all the results show that the expert pianists considered themselves such good sight-readers that they did not practice the piano duet repertoire individually, only in their ensemble rehearsals (p. 58). Furthermore, the researchers point out that the most striking feature of the ensemble rehearsals was the lack of verbal communication; "Over 90% of the rehearsal time was spent playing" (p. 59). The musicians themselves explain this by saying they were so used to accompanying and hence responding to others, that no one took the solo role, instead they "listened with accompanists' ears." In conclusion, the researchers found that these piano duet musicians mainly used the rehearsals to consolidate "the timing, phrasing and sense of musical style" and that "an emergent set of coordinated, non-verbal gestures and eye-contact" were developed and used in this respect (p. 53).

Seddon and Biasutti (2009) discuss different modes of communication between members of a string quartet, focusing in particular on group communication and creativity. The study revealed six modes of communication and two levels of attunement. The modes of communication were interpreted as verbal or non-verbal "instruction, cooperation, and collaboration", and the levels of attunement were interpreted as "sympathetic and empathetic" (p. 115). Focusing now on the six modes of communication, the category of "verbal instruction" included group members giving each other verbal instructions on when to start playing or how a part should be played, or they were verifying notes in the score. This category did not require discussion (p. 124). Of special interest for the present study is the category of "non-verbal instruction," in which the researchers found that the musicians communicated through something they labeled as "aural demonstrations," which is exemplified by the players demonstrating to each other how a specific part should be played (p. 127). As regards the category "verbal cooperation," this included discussions, clarifications, and evaluations of organizational issues not involving creativity, e.g. bowing or technical issues. The "verbal collaboration" category, on the other hand, included discussions regarding possible creative changes, in this category changes in interpretation were discussed, developed, and implemented (p. 126). The non-verbal category referring to "cooperation" was about "sympathetic attunement" including body language, eye contact, and musical cues in order to achieve a cohesive performance, in the sense of staying in time and generally

playing together (p. 128). The non-verbal category referring to "collaboration" was about "empathetic attunement" including communication conveyed directly through musical interaction, focusing on taking creative risks (pp. 125,128).

Although professional musicians are not in the center of the present thesis, these two studies provide interesting and useful findings for ensemble research in general. Williamon and Davidson (2002) explain how the professional musicians in their study use their rehearsal time; over 90% of the time was spent playing. Moreover, the time was mainly used to agree on interpretational choices, in which much was communicated non-verbally. However, the study of Williamon and Davidson (2002) concerned piano duets, while the present study concerns two trios and a quartet, and is in that respect quite different. Seddon and Biasutti's (2009) research goes more deeply into the communication structures of the ensemble they investigate: a professional string quartet. The six modes of communication, touching upon both verbal and non-verbal communication, as well as instructional, cooperative, and collaborative modes provides an interesting ground for discussing the findings in the present thesis, and I will therefore comment further on this study later.

Some research literature takes on a more comprehensive approach to ensemble practice within a professional context, and the following studies are included here to broaden the perspectives on ensemble research.

Davidson and King (2004) write about strategies for ensemble practice, and discuss the nature of group dynamics (e.g. how it varies within different kinds of ensembles), the rehearsal situation (i.e. its general structure and an ensemble's approaches to individual pieces) and verbal and nonverbal communication (both between conductor and ensemble and between co-performers). Finally, they mention case studies that are carried out within the research field of ensemble practice. As a conclusion, the authors emphasize that there is no single "best" method for rehearsing a piece of music and that each ensemble should rather find their "best" ways of rehearsing. Moreover, they give the advice that performers should "develop a greater awareness of the social psychological principles that govern group interaction and cohesion" and that "players should reflect over the effectiveness of their rehearsal methods and ways of communicating" (p. 120).

Goodman (2002) discusses four aspects of ensemble performance: "coordination (keeping time), communication (aural and visual signs), the role of the

individual and social factors" (p. 165). The coordination of timing includes considerations about what Goodman calls "the ensemble's clock," "timekeeping skills," and "the illusion of synchrony." As regards communication she claims that "aural communication (being able to hear each other) is more important than visual communication (being able to see each other)" (p. 156). As an example, she refers to the way each performer continually listens to how the others play, so that if someone changes the articulation or starts a crescendo, the rest of the ensemble will follow, in order to make fine adjustments. The aspects concerning the role of the individual and the social factors, address the individual as part of a collective and the need for give and take, as well as the issues of teamwork and leadership within an ensemble.

Blum (1986) is a kind of hybrid between a research report and a novel, as it is based on empirical data from round-table conversations with the members of the Guarneri quartet, presented as one long conversation. The book addresses several topics concerning what it is like being a member of a string quartet; the musicians analyze their roles, and their instruments' roles, in the ensemble, and they talk about issues such as tuning, intonation, bowing, dynamics, rhythm, and tempo, among other topics.

Summary of research into ensemble rehearsals

All the different approaches to ensemble research provide an overall good starting point for understanding different characteristics of musical ensembles, such as social and organizational aspects, as well as musical communication (both verbal and non-verbal). It seems, though, that there is a still room for research investigating the collaborative and verbal communicational aspects of student ensemble rehearsals, and most certainly there is room for research into the role of aural awareness in students' ensemble rehearsals.

2.3.2 Aural awareness in relation to musical performance

This section includes research studies using the concept of aural awareness, or adjacent concepts such as aural skills or aural training. Because to my knowledge no studies concentrate on aural awareness as a specific focus within ensemble rehearsals, the impact area was expanded to concern the relation to musical performance in a broad sense. The search results can therefore be divided into two main categories: studies exploring the utility value of aural

skills and aural training, and studies seeking to improve the relationship between aural awareness and musical performance through aural training. Both take an educational context as a starting point.[20]

Studies exploring the utility value of aural skills and aural training

An example of a research study looking at the utility value of aural skills in relation to musical practice is a doctoral thesis by McNeil (2000).[21] McNeil's aim is to establish "whether aural skills […] actively influence, inform and enhance performance skills." In the first (of a total of three) sub-study she interviewed students and teachers and found that:

> […] teachers and pupils are frequently unaware of any relationships between aural skills, as defined through the ABRSM's tests, and performance ability. […] It also became apparent that they could not divorce aural skills, as defined in examinations, from aural skills needed to produce a 'good' performance (McNeil, 2000).

Since McNeil uses the ABRSM's practical examinations as a point of reference, the study reflects mainly on the transferability of the aural skills defined here, to musical practice.[22] However, McNeil (2000) also found that when she informed the interviewees about the difference between aural testing and aural skills, they acknowledged a connection between training of performance skills and aural abilities.

Another research study by Øye (2013) investigates "whether music analysis might function as a bridge between the subject of instrumental performance and the subject of aural training in higher music education." Øye's starting point was that music analysis with use of professional terms holds a grounded position in aural training, and hence she assumed that music analysis would hold a similar position in instrumental lessons. A three-part study was conducted, in which first Øye observed lessons given by instrumental teachers to undergraduate students, next, a survey was conducted among these students,

20 When searching for relevant research literature I have used an extended variety and combination of words (aural awareness, aural skills + performance, practice, chamber music and so on). The methods in use have been online searches in databases and research journals, searches in the library database, as well as the snow-ball-effect of exploring the reference lists in articles and literature.

21 It is difficult to determine the level to which the students/pupils referred to in this study belong, but since there are few research studies relating aural skills to musical practice, I have chosen to include it in this literature review.

22 ABRSM: the Associated Board of the Royal Schools of Music.

and finally she did group interviews with some of the students. The findings show that music analysis did not function as a bridge between performance and aural training. However, Øye (2013) emphasizes that the students were nonetheless concerned about bringing music analysis and performance more closely together. She suggested that this interest should be used for making improvements, and that "communication between teachers across the subject boundaries are vital" (p. 50).

There are also research studies concerning the utility value of the aural training subject in general. Jørgensen (2009) refers to two studies, Reitan (2006) and Spencer (1993), both of whom conclude that undergraduate students had a positive attitude towards the ear training and theory subject, and that the students considered skills and knowledge acquired in such courses as useful in their work as musicians.

These four research studies conclude quite differently. McNeil (2000) concludes that the students and pupils were unaware of the relationship between aural skills and performance and Øye (2013) concludes that music analysis did not function as a bridge between performance and aural training. Reitan (2006) and Spencer (1993), on the other hand, found the opposite, and conclude that utility value was great. These different results can be useful when discussing the findings of the present study. However, there is an important difference in the research designs. The present study explores aural awareness within a musical practice *without* comparing the participant's aural awareness to the learning goals of the formal aural training courses. The aural training subject constitutes a part of the institutional context of the study, and the participants may talk about utility value, but it is not an explicit subject of discussion in this thesis.

Studies seeking to improve the relation between aural awareness and musical performance through aural training

Ilomäki's (2011) doctoral thesis looks at aural-skills courses for pianists in the Sibelius Academy from an action-oriented perspective. The aim was to "broaden the rather classroom-centred viewpoint that has dominated aural-skills education and to provide conceptual tools for discussing how people may learn aural skills both in formal education and through their broader engagement in music" (p. iii). Ilomäki found that it was possible to "suggest giving keyboard work a more substantial position in pianists' aural-skills learning, recognising that the ability to perceive and imagine music through one's instrument is a worthwhile

musical skill in itself" (p. iv). Also, one should give "a larger role to the students' instrumentally mediated awareness of music: an awareness of music that is connected to the piano" (p. 239). In a recent article Ilomäki (2013) discusses her doctoral action-research project, and emphasizes that "collaborative activities such as improvisation tasks or co-operative analyses of musical examples benefited the classroom atmosphere" and that the project suggested "a need to broaden traditional notions of what counts as aural skills" (p. 132).

The research studies (Cargill & Pratt, 1991; Pratt & Henson, 1987) that culminated in Pratt's (1998) book *Aural awareness* are also concerned about how the aural training subject can be further developed in order to improve the connections between aural awareness and musical practice. There will be a discussion of their work in 3.3.2.

Summary of research into aural awareness in relation to musical practice

To conclude, some studies explore the utility value of aural skills and aural training and some studies seek to improve the relation between aural awareness and musical performance through the aural training subject. Ilomäki's study is firmly anchored in the teaching of aural skills and seeks to improve this practice by exploring the advantages of making extended use of instruments in the lessons. Pratt, Henson, and Cargill also take the aural training subject as a starting point for enhancing aural awareness.

All of these studies take an educational context as a starting point, but none looks specifically at aural awareness from the angle of musical practice or a musical practice as part of undergraduate studies. The present thesis will therefore look at ensemble rehearsals in higher music education as a learning context for necessary negotiations about aural awareness, seeking to understand in what ways the students are aurally aware, how aural awareness is a part of their problem-solving, and what kinds of tools they share in order to improve their playing.

2.4 Summary

This chapter has shed light on aural awareness in ensemble rehearsals as a research field from three different viewpoints; by a discussion of higher music education as the research context of the study, by discussion of the Norwegian

Academy of Music as the empirical context of the study, and by a review of relevant literature.

Higher music education constitutes the research context for the present study: the participating ensembles consist of undergraduate students and they are formally connected to a chamber music curriculum. This chapter therefore began with a brief presentation of chamber music as a performance subject within higher music education. Aural training was also presented briefly, as a complementary subject in higher music education. Although aural awareness is more or less connected to the formal teaching of the aural training subject it is included as part of the research context in the present study.

The present research study is carried out at the Norwegian Academy of Music in which the members of the three participating undergraduate ensembles are studying. Hence, this institution constitutes its empirical context. Both the chamber music subject and the aural training subject were presented briefly as they are taught at NAM, in order to provide the reader with insight into the everyday formal student-life for the participants.

Finally, research literature relevant to the present study has been presented and critiqued. As a conclusion, I would say that little has been done either in the field of aural awareness in musical practice, or on aural awareness in chamber ensembles. Indeed, Jørgensen (2009) argues that the integration of music theory and instrumental practice is "a prime topic for enhancement of teaching and learning quality in our institutions [higher music education], and one that needs much research effort" (p. 120). I hope this thesis might contribute in such an effort.

3 A sociocultural perspective on aural awareness in ensemble rehearsals

3.1 Opening considerations

This chapter outlines and explains the theoretical perspective at work in this research study. I believe the purpose of theory is to put the study *in perspective* throughout the research process: my theoretical perspective therefore helps to shape my view of the world around me, influences what I see when I observe and interview the participants, and serves as my analytical lens in the interpretation of the empirical data. Finally, it is through this optic that I attempt to answer the problem and research questions in this thesis.

3.1.1 Musical, pedagogical and research framing

It is important to remember, in an empirical research study of this kind, the distinction between the researcher, who collects and analyzes data according to a theoretical perspective, and the subjects, whose activity has a life and purpose outside the study and their role as 'data' providers. As the researcher, my intention is to collect and analyze data, and I am equipped for this with a theoretical perspective. But the students' primary intention is not to provide me with data, but to rehearse chamber music. And they carry out this activity independently of my theoretical perspectives. In order to make a clear distinction between my intentions and those of the participants' in this research project I characterize the students' rehearsals as having a *musical framing* and the present

research study as having a *research framing*. Because the curriculum has the stated aim that the students will not just learn chamber music, but also learn how to rehearse chamber music (see 2.2.1), and I am concerned with how aural awareness is part of their problem-solving processes, I would say we share a *pedagogical framing*.[23] My aim in making these distinctions is to emphasize how researchers and participants have quite different roles and intentions (see chapter 4 for an elaboration of the researcher's role during observations in the field).

3.1.2 Challenges and synergies of a multidisciplinary topic

One could say there are three subject areas in higher music education that can claim ownership to the subject of this thesis: musical listening, chamber music, and music education. The present thesis covers all three of these. Aural awareness is a feature and goal of the area of musical listening and ensemble rehearsals belong to the area of chamber music. Finally, the word "in," in "aural awareness *in* ensemble rehearsals," is chosen with care, for it is this "in" that connects the research study to the area of music education. A challenge in this study, however, is to merge these three subject areas.

As discussed in the introduction of this thesis, there seems to be an emphasis on the individual in the subject area of musical listening and an emphasis on collaboration in ensemble rehearsals. The present research study's focus on the former *in* the context of the latter reveals synergies between the two, by connecting aural awareness with ensemble rehearsals, literally, practically, and theoretically. Literally, it is the preposition that links aural awareness to ensemble rehearsals. Practically, it makes clear that the research project's aim to understand the role and available knowledge resources of aural awareness *within* the musical context of ensemble rehearsals. Theoretically, the word *in*, here, takes as its starting point, the assumption that aural awareness is an integrated part of what takes place in ensemble rehearsals—that aural awareness is something that can be shared through negotiation in the ensembles' collective efforts to improve their playing.

23 These categories are inspired by Folkestad's (2006) discussion of intentionality in musical learning, described as a distinction between a *musical/artistic framing* (playing the music) and a *pedagogical framing* (i.e. learning how to play the music) (Saar 1999 in Folkestad, 2006). Here, I have expanded with a third category: *research framing*.

The theoretical ground for this research study can be discussed under two main topics: (i) learning in ensemble rehearsals and (ii) aural awareness in a collective learning situation.

3.2 Learning in ensemble rehearsals

3.2.1 Characteristics of ensemble rehearsals

In the introduction to the thesis, I concluded that ensemble rehearsals are characterized by their collaborative nature. According to Roschelle and Teasley (1995) "collaborative work between peers provides a particularly rich environment for studying learning," partly because it elicits verbal communication (p. 69). However, as the literature review in chapter 2 showed, a professional piano duo spent over 90% of their rehearsals actively *playing* (Williamon & Davidson, 2002). Furthermore, in a video recorded dialogue between two Nordic viola professors, one of them said that he and the pianist barely spoke in their rehearsals, which he considered ideal (Johansen, 2005). It is interesting to note that there might be differences between how students and professionals rehearse in this respect. Taking the above statement from Roschelle and Teasley, as well as the above findings regarding professional musicians into consideration, I will argue that there is a need to investigate both the verbal and the non-verbal communication in student ensembles' collaboration, but that I expect more verbal negotiations in student rehearsals than in professional rehearsals. The consideration behind the students' musical ideas might be in greater need of verbal explanation, in particular if the student ensembles want to discuss their varying opinions and the knowledge resources supporting their views.

Both verbal and non-verbal communication can be called negotiation. In the present thesis I follow Wenger's (1998), concept of "negotiations of meaning" (p. 53). Wenger's point is that negotiations are part of a process, in which we are all constantly engaging in experiencing things anew. Though we know our colleagues well, we repeatedly engage them in conversation, and though we eat lunch every day, we still taste the food anew. "Our engagement in practice may have patterns, but it is the production of such patterns anew that gives rise to an experience of meaning" (p. 52). This is a good description of what may happen in the students' ensemble rehearsals. Though they are practicing the same piece of music, they engage with it anew each time they play it. In each

rehearsal, they produce new situations and seek solutions to new problems, and in doing so they are creating new experiences which are meaningful to them. It should be noted that Wenger argues that a negotiation ”may involve language, but is not limited to it” (p. 53). This is also in line with what I have just argued: I consider both verbal and non-verbal negotiations as important within the students’ ensemble rehearsals.

According to Davidson and King (2004) a characteristic of ensemble rehearsals is that they are “commonly geared toward public performance, most typically with the focus of attention being on the achievement of musical fluency and group coordination”(p. 105). This is in line with the musical framing I described above: an ensemble will constantly seek to improve their musical performance. In the present thesis, I refer to this as problem-solving, which involves at least three aspects of particular importance for ensembles: (i) to define a common understanding of a problem, (ii) to negotiate the problem, and (iii) to find a solution to the problem. Among other things, such a problem-solving process depends on how well each musician communicates his or her listening experience to the others.

Three salient characteristics of ensemble rehearsals have now been identified: collaboration, negotiation, and problem-solving. In order to understand how ensembles’ aural awareness influences their collaborative efforts to improve their playing I argue that a sociocultural view of learning in ensembles is a fruitful theoretical perspective.

3.2.2 Sociocultural theory of learning

Säljö (2001) argues that learning should be understood within a communicative and sociohistorical perspective—that knowledge exists first in the interplay between humans, then becomes part of each individual’s thoughts and actions, before it returns in new communicative contexts. This view sees learning as a question of how individuals and collectives acquire, develop, and maintain social experiences (Säljö, 2006), which means that an important aspect of a sociocultural view of learning is to understand how the society ‘saves’ and ‘takes care of’ different kinds of knowledge, and how people utilize these collective historical and cultural resources.

Therefore, as Säljö (2006) points out, the sociocultural perspective is not a universalist view and does not discuss learning and development in general terms; it is an important assumption that learning is not the same in different societies

and different cultures. This has to do with the situated character of action as a central concept in sociocultural theory, that activities take place within a cultural, historical, and institutional context (Wertsch, 1991). In the present study, the cultural context of playing in an ensemble with fellow students must be seen in relation to the historical conventions that come with classical chamber music, and the institutional conditions in the curriculum at the Norwegian Academy of Music, along with several other aspects affecting the situation.

Säljö (2006) argues further that a sociocultural theory of learning accentuates social aspects:

> From a sociocultural point of view, it is rather obvious that the knowledge and skills that constitute social experiences do not come from inside the individual—they have been developed in the society and between humans. […] In a sociocultural perspective, and through its focus on how humans acquire social experiences, learning comes before development. To learn is to benefit from parts of the society's collective knowledge and skills […] (Säljö, 2006, p. 22, my translation).[24]

In the present study such collective knowledge refers to different collective *musical* knowledge resources. A fundamental precept of the present thesis is that knowledge resources refers to a collective 'reservoir' of available knowledge that has the *potential* of being utilized within ensemble rehearsals. Knowledge that is utilized, and also shared, is considered as a tool when contributing in a problem-solving process. As posed in my second research question (see 1.3), I set out to explore more specifically what *kinds* of tools that are shared in the ensembles, and how. In the following sections, I clarify my understanding and use of these concepts in the present thesis.

3.2.3 Tools and mediation

> Strictly speaking, nothing is a tool unless during actual use. […] Strictly, a thing is a tool or not a tool just as it may happen to be in use or not. Thus a stone may be picked up and used to hammer a nail with, but the stone is not a tool until picked up with an eye to use; it is a tool as soon as this happens, and, if thrown away immediately the nail has been driven home, the stone is a tool no longer (Butler, 1913).

Butler was not writing in an academic context, but the quotation above illustrates the ways I understand and use the term "tool": a tool must be used in order to be a tool. I also argue that different actions make use of different

24 See appendix 1 for original Norwegian.

potentials in tools (Wertsch, 1998). This implies that tools have no fixed meanings, and that the stone mentioned in Butler's example could have been used in order to crush something, or in order to start building a cairn. In these cases, the stone's potential would have been realized differently from its role as a hammer, and it is the person using the stone as a tool who decides the use to which it will be put.

Vygotsky (1978) distinguished between "tools" and "signs," emphasizing that these had different ways of orienting human behavior: the tool "is *externally* oriented; it must lead to changes in objects," while the sign "is a means of internal activity aimed at mastering oneself; the sign is *internally* oriented" (p. 55, italics in original). This means that both tools and signs can have mediating functions; the difference is that the tool serves as a mediational means between the human and an object of activity (the mastering of nature), while the sign serves as a mediational means for psychological processes (the mastering of behavior) (Vygotsky, 1978).[25] Elsewhere, Vygotsky (1981) distinguished between "psychological tools" and "technical tools", which were basically other terms for the same principles, but articulated more clearly, with examples:

> Psychological tools are artificial formations. By their nature they are social, not organic or individual. They are directed toward the mastery or control of behavioral processes—someone else's or one's own—just as technical means are directed toward the control of processes of nature. The following can serve as examples of psychological tools and their complex systems: language; various systems for counting […] works of art; writing; schemes; diagrams; maps; […] all sorts of conventional signs; etc. (Vygotsky, 1981, p. 137).

Such a distinction could be useful if one wants to label subdivision of music as a psychological tool, for example, or a metronome as a technical tool.[26] However, some scholars (Engeström, 1999; Säljö, 2006) have argued that this division between psychological and technical tools is not very useful. Säljö (2006) suggests instead that one should look at cultural tools as having both physical and intellectual aspects (p. 28). In the present thesis, therefore, it seems most

25 This distinction is not used in the further discussion, apart from when Wertsch (2007) uses the term "sign." It should be noted that Vygotsky also underlines the real tie between these two different activities, and this argument results in his concept of "internalization," which refers to "the internal reconstruction of an external operation" (Vygotsky, 1978, p. 56).

26 "Technical tools" are often used synonymously to the term "artifacts." According to Säljö (2001) artifacts refers to objects or products made by humans (p. 31). I will not use the term artifacts in this thesis.

expedient simply to use the term tools, with the implicit understanding that the tools I talk about are culturally developed, with mediating functions, and potentially having both physical and psychological aspects. This might also lighten the language in the analyses of the empirical data.

Tools do have mediating functions. And the concept of mediation is therefore the crucial and connecting link between a tool and a subject. In the original model of "the mediating act," Vygotsky (1978) uses the behavioral stimulus–response (S–R) formula—presupposing a direct reaction to a task—as a starting point for arguing that the structure of sign operations requires an intermediate link between the stimulus and the response, as shown in figure 1.

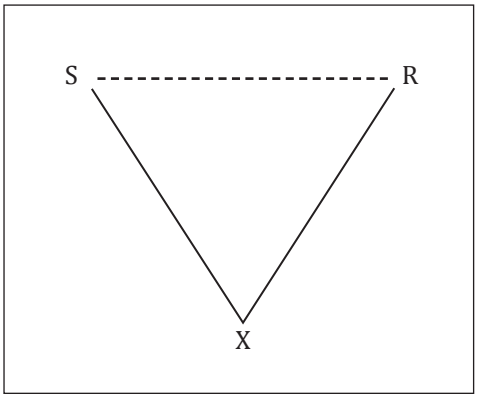

Figure 1: "The mediating act", as described by Vygotsky (1978, p. 40).

Vygotsky then emphasizes that the structure of the sign (X in figure 1) "creates a new relation between S and R," and that "an individual must be actively engaged in establishing such a link" (Vygotsky, 1978, p. 39). One could say that tools mediate one's understanding of something. This is also how Säljö (2001) understands and explains the concept of mediation. In his exemplifications, a microscope can enlarge microorganisms so that they become observable, and a pair of glasses can make it possible to read this text (p. 82). The microscope and the glasses, then, are in my understanding mediating tools between the human and the subject (microorganisms, and the human and the text respectively) *as* they are in use. This relation between mediating tools, subject, and object has been described by Leont'ev (1978), who did not illustrate with a graphic model. But the relation is often displayed as a graphic triangle, sometimes credited to Vygotsky (1978), and sometimes to Engeström (1987) as similar to the 'upper part' of his activity system. Säljö (2006) represents the relationship with a similar triangle (see figure 2).

As mentioned above, the subdivision of music may be seen as a mediating tool in an ensemble rehearsal, in which subdivision would be mediating the musicians' (the subjects') understanding of the music (the object). This understanding of mediation is fairly straightforward. According to Wertsch (2007), however,

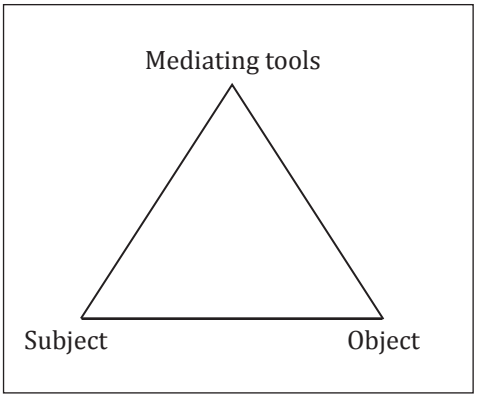

Figure 2: Mediation as relation between subject and object (Säljö, 2006, p. 28, my translation).

the concept of mediation emerges in a variety of ways with somewhat different meanings in Vygotsky's writings. In his interpretation of Vygotsky he therefore distinguishes between "explicit" and "implicit" mediation: "Explicit mediation involves the intentional introduction of signs into an ongoing flow of activity. […] In contrast, implicit mediation typically involves signs in the form of natural language that have evolved in the service of communication and are then harnessed in other forms of activity" (Wertsch, 2007, p. 185). As a further clarification, Mäkitalo (2012) understands and explains Wertsch's explicit mediation this way: "In explicit mediation, the […] tool becomes the object to which the participants orient themselves. It also organises their perception and action in the ongoing activity" (p. 62). Mäkitalo explains Wertsch's implicit mediation this way: "the signs involved are part of an already ongoing stream of communicative action but are then brought into contact with other forms of goal-directed behavior" (p. 62). In the context of the present study, explicit mediation might be intentionally introduced into a problem-solving activity in a rehearsal, with the tool becoming the center of the ensemble's attention. Such a tool might for example be an ensemble member's suggestion that they isolate a rhythm and rehearse it out of its musical context. This will likely turn the ensemble's attention to this way of rehearsing the rhythm. An example of implicit mediation might be non-verbal gestures, not intentionally introduced into the problem-solving task, and perhaps without the students recognizing them as mediating their understanding. Examples of such gestures might be one of the ensemble members tapping the pulse on the lap, or singing a phrase to the others. For the ensemble members, these actions might be part of their ongoing stream of communication, but from the researcher's point of view, they might be seen as tools.

Furthermore, Wertsch's (1998, 2007) view of cultural tools is somewhat different from Vygotsky's view. While Vygotsky tended to emphasize the empowering aspects of mediational means, and especially language (Alanen, 2003) Wertsch believes that cultural tools can bring with them "constraints" as well as "affordances" (2007, p. 186). Using the metronome again as an example of a tool in

an ensemble rehearsal, the metronome might be just as likely to constrain the musicians' understanding of the time as to afford them a better understanding of the time. The metronome might even constrain the musicians' understanding in a way that conceals other musical aspects. What Wertsch (1998) in general emphasizes is the individual's power to influence the use of cultural tools:

> Among other things, this means that cultural tools should not be viewed as determining action in some kind of static, mechanistic way. Indeed, in and of themselves, cultural tools […] are powerless to do anything. They can have their impact only when an agent *uses* them (Wertsch, 1998, p. 30, italics in original).

This statement brings me back to where I started, arguing that nothing is a tool unless during actual use and that tools do not have fixed meanings. In this study tools will be understood to receive meaning when the ensemble, or one of the ensemble members, decides to use and share them in a certain way.

In the second research question posed in 1.3 I asked: what kinds of tools are shared in order to improve the ensembles' playing, and how? With the above reasoning as a basic understanding of what a tool might be, I will argue that tools can be any kinds of knowledge resources that mediate the students' aural awareness and their collaborative efforts to improve their playing. This is in line with Hultberg's (2011) broad understanding and use of the concept: she describes performance, interpretative metaphors and dancing, as well as spoken comments, as "cultural tools." Hence, tools in this study might be language (e.g. concepts or terminology), symbols in the sheet music (notes or other marks), a concrete problem-solving suggestion (tuning a chord) or an interpretational metaphor ('play like we are out marching') and so forth. Sometimes, the fellow musicians might also have a mediating function: peers as mediators for learning, as described by Johansen (2013, p. 351) among others.

In sociocultural theory the spoken word and verbal communication might seem to take precedence over non-verbal communication. As regards tool-mediated activity Vygotsky claimed that "in this communicative process language is the tool of tools" (Mäkitalo, 2012, p. 62). Wertsch (1998) has also claimed that language and concepts can be conceived as the most important cultural tools that we as humans can use. A great deal of the professional language the musicians in this study may use in order to communicate verbally is music terminology. Hence, the verbal negotiations in the ensemble rehearsals in this study will be important; but in my view, the non-verbal negotiations are just as important, and are therefore regarded on the same level as verbal communication.

3.2.4 Knowledge resources

I concluded above that tools are tools only when they are in actual use. "Knowledge resources" will then differ from tools as meaning all the knowledge that is available to the ensembles. When these knowledge resources are utilized by the musicians, they may become shared tools. Based on a sociocultural understanding, the concept of knowledge resources can therefore be seen as a collective "reservoir" of resources. These resources are brought forth culturally and historically by humans, and are also constantly reproduced by humans through our communication.

The concept of "knowledge" comprises a number of understandings. I use it here in a broad sense, which includes practical, theoretical, and acquaintance knowledge. My identification of these particular forms, or aspects, of knowledge is a pragmatic choice, and is meant to provide a conceptual base for discussing and analyzing available knowledge resources and tools in the present thesis. Primarily I would prefer not to divide knowledge into forms or aspects, and hence I agree with Gustavsson (2000) in saying that the different forms of knowledge do not exclude each other; there are no impermeable walls between them (p. 119). When performing music, such a distinction between forms of knowledge would, in fact, be artificial. Elliott (1991) makes this point when he says that musical performance is characterized by a complex integration of different forms of knowledge (p. 28). Furthermore, Elliott claims that musical performance is a goal-oriented, intentional activity in which the reflections are integrated in the actions, rather than preceding them. Nerland (2004) adds to Elliott's argument that it says something about the complexity of musical knowledge: that knowledge is not just 'ready' in advance, but is shaped during the activity and takes place in time. However, for analytical purposes in the present context, a distinction between the following forms of knowledge has seemed appropriate.

Ryle (1949) refers to the concepts of practical and theoretical knowledge as "knowing how" and "knowing that." In a musical setting, one would say there is a difference between knowing *how* a minor third sounds and knowing *that* the distance is three semitones. The third form of knowledge mentioned above is acquaintance knowledge. In this thesis I base my understanding of the way this concept works in relation to musical knowledge on the formulation of

Swanwick (1994).[27] According to Swanwick (1994), who is referring to Ryle's "knowing how" and "knowing that," we may call acquaintance knowledge "knowing 'this'; knowing *this* person, *this* place, *this* symphony, *this* song" (p. 17). For example, the knowledge of and experiences with the "conventions of musical expression" (Hultberg, 2000) are very important for the students in the present research study, who are playing classical music. This is something Nerland (2004) also exemplifies in her discussion of musical acquaintance knowledge:

> For a musician, the familiarity with for example musical style and first hand experiences from different compounds of musical elements constitute an important repertoire for acting adequately, and functioning in the current context. It is also acquaintance knowledge when a musician recognizes characteristics of a composition in the light of earlier experiences with the style, or when he/she understands where the initiative from a fellow musician is going, and is able to follow up with changes in tempo or dynamics (Nerland, 2004, p. 49, my translation).[28]

Nerland is describing the kind of first-hand knowledge that is often called musical intuition. When Swanwick (1994) discusses Croce's hierarchy of knowledge, "intuitive knowledge" (parallel to acquaintance knowledge), is always the basis for how we understand "logical knowledge" (parallel to theoretical knowledge) (p. 29). This view is somewhat similar to Polanyi (1958) who uses the concept of "personal knowledge" in order to describe all knowledge as personal. Polanyi (1958) views knowledge as something humans carry with them. He also sees knowledge as an activity—something that should be utilized—and therefore prefers to talk about the active "knowing" instead of knowledge.

If Polanyi's perspective on knowledge as something personal and active is combined with the view on collective knowledge sharing that I have established as a theoretical ground in this thesis, then two *kinds* of knowledge resources appear: available knowledge resources can be collective or personal. In light of the sociocultural perspective in this thesis, both collective and personal knowledge resources should be seen as 'shareable'. More precisely, as emphasized by Børte (2011), "it is in the intersection between the resources available in the institutional practice and the personal knowledge the participants bring to the practice that the […] work gets done through social interaction" (p. 56). Hence, the discussion of how music students are aurally aware in ensemble rehearsals

27 Swanwick (1994) credits the concept "acquaintance knowledge" to Russell (1912 in Swanwick, 1994, p. 16)

28 See appendix 1 for original Norwegian.

revolves around the question of how they make use of collective *and* personal knowledge resources in order to reflect on and assess musical performance in their rehearsals. Theoretical, practical, or acquaintance knowledge thus can be seen as different forms of knowledge in ensemble rehearsals, and each of these forms can have either a personal or a collective aspect as a knowledge resource. Collective knowledge resources are still seen as culturally and historically brought forth, while personal knowledge resources are those that have been internalized by the students, and which they would have to share in a rehearsal setting.

3.2.5 Sharing knowledge through social interaction

In the discussion above, I argued that for analytical purposes knowledge might be seen as having theoretical, practical, and acquaintance aspects. I also distinguished between personal and collective knowledge resources. I will now clarify *how* knowledge might be shared through social interaction in ensemble rehearsals.

The question whether all knowledge can be articulated has been debated, and in particular among those debating the concept of tacit knowledge. For example, Gustavsson (2000) gives an account of Rolf's criticism of interpreters of Wittgenstein, which concerns the unsuccessful conclusion that tacit knowledge is indescribable (p. 118). In this criticism the counter-argument must be that all knowledge somehow can be articulated, which is also more in line with Polanyi's view. In the present context, Grimen (2008) can further contribute to this clarification with his two modes of articulation: "verbalization" and "action" (Grimen, 2008, p. 82, my translation). According to Grimen all knowledge can be articulated one way or the other (p. 82). His point is rather that not all knowledge can be *verbally* articulated. Some knowledge is better articulated through *action*. Thus, he also claims that action is just as fundamental a way of articulating knowledge as is verbal articulation. In an ensemble rehearsal, these two modes of articulation can be useful when describing what kinds of tools the ensembles share, because they can help identify the available knowledge resources, and thereby how knowledge is shared in the process of their negotiation.

Take as an example a problem with the tuning of a chord. The ensemble has several potential knowledge resources to draw upon, and these can be articulated in different ways. If they utilize theoretical knowledge resources this

might be articulated in a verbal mode, in the form of a discussion of oscillations. If they utilize practical knowledge resources, they might articulate this in a verbal *and* action mode, comprising both a discussion of how to first tune the consonant intervals and then add the other notes, and playing and testing the actual notes. For example, a string player may be repeatedly playing the note of current interest with different fingering until it is in tune with the others. This would be a typical example of articulating knowledge through action. The string player may know how to play the note in tune, but may not necessarily have described or negotiated it verbally. Hence, it is a way of sharing knowledge with the fellow musicians through action.

3.2.6 Constructing and maintaining a Joint Problem Space

I have concluded that ensemble rehearsals are focused on problem-solving, and that identification and negotiations are important parts of such processes. Furthermore, I have suggested that collaboration is self-evident and necessary in ensembles, and that ensembles therefore share knowledge through their social interaction. In the first research question (see 1.3) I asked: How is aural awareness part of the ensembles' problem-solving processes? I then argued that I would focus specifically on how groups solve problems through the concept of "Joint Problem Space" (JPS) (Roschelle & Teasley, 1995). I will now explain this concept, and how it can contribute in the understanding of problem-solving in ensemble rehearsals.

Roschelle and Teasley's (1995) aim is to examine "the construction of *shared* knowledge in collaborative problem solving" (p. 73). Hence, they focus specifically on the *process* of collaboration, not just its outcome. In order to be very specific about what collaboration is, Roschelle and Teasley give the following definition: "Collaboration is a coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem" (p. 70). In this definition, they emphasize that there is a distinction between "collaborative" and "cooperative" problem-solving. This means that "cooperative work is accomplished by the division of labour among participants, as an activity where each person is responsible for a portion of the problem solving" (p. 70). Collaboration, on the other hand, is "the mutual engagement of participants in a coordinated effort to solve the problem together" (p. 70). They further distinguish between synchronous and asynchronous activity. Synchronous activity involves face-to-face interactions. This

does not mean they propose that collaboration cannot occur in asynchronous activity, rather that they want to focus on collaboration that is synchronous. Furthermore, the notion of "a shared conception of the problem" is central. Hence, they propose that social interactions in the context of problem-solving activity occur in relation to what they call a Joint Problem Space (JPS) (p. 70).

More specifically, according to Roschelle and Teasley (1995), a JPS is "a shared knowledge structure that supports problem solving activity" by integrating the following components:

(a) goals;
(b) descriptions of the current problem state;
(c) awareness of available problem solving actions;
(d) associations that relate goals, features of the current problem state, and available actions

(Roschelle & Teasley, 1995, p. 70).

Hence, a JPS is a shared conceptual space that is negotiated through collaborative problem solving. This conceptual space is "constructed through the external mediational framework of shared language, situation and activity." (p. 70). The heading of this section refers to constructing and maintaining a JPS. Roschelle and Teasley say:

> Specifically we hold that collaborative problem solving consists of two concurrent activities: solving the problem together and building a JPS. These activities necessarily co-exist. Conversation in the context of problem solving activity is the process by which collaborators construct and maintain a JPS. Simultaneously, the JPS is the structure that enables meaningful conversation about problem solving to occur (Roschelle & Teasley, 1995, pp. 75-76).

This statement underlines the need for a group to find common ground when they encounter a problem, and, importantly, shows that this is done by constructing and then maintaining a JPS. In ensemble rehearsals I suggest that the construction of a JPS itself is crucial in order to solve a problem. For example, if an ensemble stops playing during a rehearsal, the first thing they need to do is to find a shared conception of what the problem seems to be. Often there will be negotiation already at this stage of a problem-solving process, because different members of the ensemble are aurally aware of different musical aspects, and therefore experience different kinds of problems. Hence, I will argue that this first task of constructing the problem consists of negotiating the two first stages in Roschelle and Teasley's model above; (a) goals, and (b) description of

the current problem state.[29] When they have agreed on the current problem and on their goal—for example that they are slowing down and their goal is to keep the tempo up in the first part of the movement—then in my view they have constructed a JPS. The reason it is a shared conceptual space is that in their collaborative efforts to construct the JPS, the ensemble members have used conversation as a mediational means for coordinating their thoughts, and have negotiated by using professional terms such as tempo, while at the same time relating to cultural-historical conventions about how to play this specific music. Though Roschelle and Teasley emphasize verbal communication: " […] the most important resource for collaboration is talk" (p. 94), as already mentioned, I believe non-verbal communication is also important in this context and I will explore that as well.

The next step will be to maintain a JPS, in order to solve the problem. According to Roschelle and Teasley, among other things, collaborators must have ways of introducing and accepting knowledge into the JPS (Roschelle & Teasley, 1995, p. 76). This point has several implications for ensemble rehearsals. In order to maintain a JPS, the ensemble members need to identify available knowledge resources (collective or personal), introduce them into the community, and then decide which resources they are going to accept into the JPS. The resources they accept will, in the overall theoretical approach in the present thesis, become shared tools. These negotiations can be compared to stage (c) above, concerning awareness of available problem solving actions.

As a conclusion, Roschelle and Teasley claim that "collaboration does not just happen because individuals are co-present; individuals must make a conscious, continued effort to coordinate their language and activity with respect to shared knowledge" (p. 94). In other words, they have to know what they are doing and why they are doing it. In relation to the present study, it is worth noting their use of the word "conscious," when they talk about the efforts the individuals must make, because consciousness is close to awareness. This makes a good transition to the discussion of the second main topic.

29 See also sections 3.3.4 and 3.3.5 for further discussion of this matter.

3.3 Aural awareness in a collective learning situation

3.3.1 The need for operationalization

The present thesis is about ensembles, and as pointed out in 1.4 I therefore argue that there is a need for a view of collective aural awareness. In that context the sociocultural theory of learning will have a strong influence on the way aural awareness can be defined. With its focus on how people handle situated communicative practices comes a need to operationalize the concept of aural awareness in relation to collective learning situations. In the present context, the psychological aspects must thus serve as an underlying premise and the sociocultural aspects become more salient. By operationalizing the concept in this way, it also becomes possible to investigate the research questions I have posed.

3.3.2 Understandings of aural awareness

Several scholars have addressed the concept of aural awareness, or concepts adjacent to it, in ways that may inform the present discussion. I present here three theoretical approaches to aural awareness that relate to both musical performance and higher music education: Pratt and colleagues' (1991; 1998; 1987) concept of aural awareness, Ilomäki's (2011) descriptions of aural awareness and aural skills, and Ward's (2007) description of musical awareness.

Pratt, Henson, and Cargill (1991; 1998; 1987) have done extensive and pioneering work on the concept of aural awareness. Their work began in the late 1980s with two surveys investigating music students' attitudes to aural training and the content of aural training courses in England (Pratt & Henson, 1987):

> The first survey showed that the students were largely dissatisfied with their aural training, seeing much of it as irrelevant to their musical needs. […] The second survey showed that most courses are heavily biased towards the dictation of pitch and rhythm with the other elements of musical expression appearing much less prominently (Pratt & Henson, 1987, p. 115).

Their response to these findings was to launch and test a completely new course for their first year students, emphasizing "that 'aural' teaching should be concerned with relevance, with teaching skills that performers, composers and active listeners actually use in their daily musical lives" (Pratt & Henson, 1987, p. 115). In order to do so, they focused on musical aspects like timbre, articulation,

and dynamics, among several other aspects. They also included criticism, not with a purpose of encouraging the students to form opinions—this they were already doing—but in order to help them become more aware of the criteria they were using to form their opinions (Cargill & Pratt, 1991, p. 28). The project resulted in a textbook called *Aural Awareness* (Pratt, 1998), which is a practical guide for both students and teachers. One of the innovations of this book was the way it closely related aural analysis and synthesis. In order to analyze, Pratt suggests directing the attention to the different "elements of musical expression." The list of these elements includes meter, rhythm, pitch, texture, timbre, compass, range, density, dynamics, articulation, placing in space, pace, and structure (Pratt, 1998, pp. 12-45). For each of these elements he suggests exercises that are closely connected to musical practice (e.g. a piece one is working on at the moment). However, he stresses that the aim of such analysis is synthesis:

> Then, as with every thought, every exercise, every experience that we isolate when developing musical awareness, it is essential to put it back immediately into the context of real music. Breaking down the total experience, analysis, becomes constructive only when followed by building it up again, by synthesis (Pratt, 1998, p. 12).

In this quotation, Pratt does in fact make use of the term musical awareness. It looks, though, as if Pratt uses the terms aural awareness and musical awareness almost synonymously, and this is consistent with the underlying principle of the book: that aural awareness is something that can be developed "all the time, everywhere" (Pratt, 1998, p. 11), and that it is closely linked to musical practice.

Ilomäki (2011) distinguishes between "aural skills" and "aural awareness." By aural skills she means musical skills typically taught in "*aural-skills courses* and *aural-skills education*" (p. 2, italics in original). She further describes some typical topics of interest in the field, distinguished as "four *sub-skills*, which in practice are highly interwoven." These sub-skills are: the development of "inner hearing," "pitch location," "harmonic, melodic and metric patterning," and "analytical organization" of music (pp. 19-20). This grouping seems to me to summarize the topics that are often addressed within aural training courses. For Ilomäki, the term aural awareness (for which she credits Pratt and colleagues) refers to "the much broader variety of ways in which people aurally perceive, anticipate and remember music in connection to their musical activities " (p. 2). She also says:

> Aural awareness involves skills and types of experience that can be developed […] but which tend to be more diverse than what can be included in […] aural skills as a subject of formal education. Musical awareness is a closely related term; aural awareness merely puts more emphasis on the hearing, listening or aural imagination of music (Ilomäki, 2011, p. 254).

In Ilomäki's definition, aural skills are described as specific cognitive proficiencies. I concur with this definition, and this underlines the reason I do not use aural skills as a key concept in the present research study. Described this way aural skills, as a concept, is rather "closed," in its focus on each individual's discrimination skills. Aural awareness on the other hand is defined, by Ilomäki, as involving aural skills, but these are connected to musical activities and are also more "diverse" than aural skills. I would add that a musical ensemble setting demands not only aural discrimination skills, but also the students' ability to identify the kinds of knowledge they need for solving different problems, and to share this within the ensemble. Unlike aural skills, aural awareness has the potential to be collective, and this is a fundamental premise in the present thesis, that when studied in the context of ensemble rehearsals, aural awareness should be viewed as a collective phenomenon.

Ward (2007) is a proponent of "musical awareness." Her interest is in how musical awareness can be used as a conceptual, connecting link between performers, teachers, and theorists, and her discussion of musical awareness is included here in order to broaden the perspective from "aural" to "musical" in terms of what the awareness is directed to. Ward says:

> A way forward might be to focus on the concept of musical awareness. According to the Guildhall School of Music and Drama Woodwind Syllabus, musical awareness includes the ability to shape phrases, a sense of musical coherence, an understanding of overall structure, sensitivity to the relationship between parts within a texture and an ability to capture mood and character (Guildhall School of Music & Drama, 2002:217). (Ward, 2007, p. 23).

In Ward's quotation from one of the Guildhall School of Music and Drama's curricula musical awareness has five dimensions, all of them emphasizing a comprehensive and interpretive approach to the music. This differs from Ilomäki's definition of aural awareness in the way that it addresses the music more directly, by talking about phrases, structure, and texture, as well as mood and character, but it is similar to Ilomäki in the way that it accentuates ability, sense, understanding, and sensitivity towards such elements.

In sum, in their conceptual breadth all three approaches contribute to the discussion about aural awareness in ensemble rehearsals. Ilomäki (2011) places

an emphasis on a cognitive approach connected to musical activity, and Ward (2007) emphasizes an interpretational approach that includes cognitive dimensions. Hence, Ilomäki and Ward show how aural and musical awareness, in these approaches, can comprise different reasoning. While Ilomäki's definition can be said to have a *cognitive* starting point that is *connected* to musical activities, Ward's approach has a *musical* starting point, that *attaches* cognitive dimensions. Pratt (1998) seems to be the most useful approach in the present study, in its balance between analysis and synthesis, and between the acquisition of aural skills on the one hand, and the varied purposes of such skills in musical practice on the other. I also prefer aural awareness as a key concept, not least because I believe the ideas of Pratt, Henson, and Cargill are due for a renaissance.

3.3.3 Aural awareness in ensemble rehearsals

In the light of the sociocultural approach and the discussion above, I propose a definition of aural awareness that is explicitly linked to ensemble rehearsals:

The concept of aural awareness in ensemble rehearsal refers to the ensemble's attentiveness, the sharing of ideas from their mind's ear, and the utilization of available knowledge resources, in their process of assessing a musical performance and deciding how to play.

By "attentiveness," I suggest that an ensemble must be open to the music, the musical performance, and to one another. Attentiveness to one another is primarily about being open to such non-verbal communication in the ensemble as musical gestures, and responding as a fellow ensemble player. Seddon and Biasutti (2009) refer to such aspects as "musical attunement," in their study of a string quartet. Johansen (2013, my translation) describes similar aspects as "collective flow," in a study about practicing improvisation: according to Johansen the participating jazz students emphasized the ability to listen as an important value within improvisation, for example in terms of having an open attitude to each other's opinions, but also in terms of musical coordination during an improvisation (p. 376).

Attentiveness to the music and the musical performance is therefore about attending to the present sound, played right here and now; but on a more philosophical level it is also about being open to the composition, or the "composition's openness" as described by Gulbrandsen (2002):

> A composition is by definition dependent on interpretation and performance. It is in this sense that the musical notation is not an end point. In music the word "interpretation" has a nice double meaning. It means playing or performance, as well as interpretation, analytical explanation or reflection in terms. Actually, we do not have access to a composition unless it is interpreted in some way. You have to play, hear, read or imagine it. A composition always appears in a *version*; hence it is always possible to picture *another* version (Gulbrandsen, 2002, pp. 10-11, my translation).

Gulbrandsen emphasizes the possibilities that exist within a composition, and the responsibility that comes with interpretation. In ensemble rehearsals, such openness must be negotiated. Attentiveness in ensemble rehearsals therefore appears in many layers: in the musicians' openness to each other, to the present sound, to the composition and to their negotiations about the composition and their musical performance. Hence, attentiveness can play a role in several aspects of ensemble rehearsals.

"The sharing of ideas from their mind's ears," in my definition above, depends on how the ensemble members individually perceive and imagine the music and the musical performance. As regards perception there are different terms describing how musicians mentally treat aural impressions. Two well-known terms are "categorical perception" (Sloboda, 1985, p. 23) and "chunking" (Lehmann, Sloboda, & Woody, 2007, p. 111; Sloboda, 1985, p. 3), suggesting that the listener (or the musician) needs to recognize structures and elements in the music. The psychological aspects will serve mostly as a premise in the present study. Therefore, in the context of ensemble rehearsals, perception is mainly a necessary starting point for assessing musical performance and deciding how to play.

Imagining music has already been touched upon in the introductory discussion of imagined sound, and as a concept it has several adjacent definitions. It could be described as "inner hearing" defined as "the ability to *think* musical sounds without external voicing" (Choksy, Abrahamson, Gillespie, & Woods, 1986, p. 89).[30] Or, it could be described as "auralizing," defined by Karpinski (2000) as the "process of hearing music mentally in the absence of the physical sound" (p. 49). Gordon's (2012) concept of "audiation" (2012), on the other hand, includes comprehension, and is defined as "the process of assimilating and comprehending (not simply rehearing) music momentarily heard performed or heard sometimes in the past" (p. 3). Gordon thus distinguishes audiation from aural

30 The quotation is from a chapter in which the authors describe the Kodaly method. I take the liberty of using the definition out of its original context.

perception; for him perception has to do with immediate sound and audiation has to do with delayed music events (p. 4). To summarize: audiation is a more complex process, and different from mere perception or mere imagination of music.

Musicians often hear the pieces they are rehearsing at the moment in their mind's ear. Inner hearing is also in play when musicians read music. Gordon (2012) calls this "notational audiation," while Pratt (1998) makes a specific distinction between two ways of reading music: "performance-reading" and "silent reading". To performance-read is to see the music's symbols "and react mentally and physically to them straight on to an instrument," while silent reading is described as "to convert the symbols into *imagined* sound, inside your head" (p. 107). Silent reading can be useful when preparing for ensemble rehearsals, especially if used in order to imagine the sound of the other musical parts when you rehearse alone. As regards the anticipation of future sounds of music, Pratt supports my earlier suggestion that anticipation in musical performance also has to do with making decisions about how to play. For this purpose Pratt uses the concept of "imaging interpretation" (p. 111). As an exercise, he suggests going beyond the written notes, and preparing your interpretation of the music before you actually hear it. Such a way of imagining music may be useful not only when *preparing* for a rehearsal, but equally so when discussing and assessing music *during* a rehearsal. The latter emphasizes the importance of sharing the imagined sound with fellow musicians, whether this is an analysis of an element of musical expression (as described by Pratt, 1998), or ideas of how to shape a phrase (as described by Ward, 2007).

In the above definition, I further suggest that aural awareness in ensemble rehearsals includes "utilization of available knowledge resources." Within the sociocultural framework of the present discussion, this means sharing of knowledge resources through communication and collaboration during the ensemble rehearsal. For example, one ensemble member's perception skills might become an available knowledge resource during a rehearsal if this student *shares* his or her opinion of who is out of tune. Or one ensemble member's ideas of an ideal phrasing of a melodic line might become an available knowledge resource if this student *shares* and tries to explain these interpretative ideas. A further discussion of knowledge resources, and of how they can be shared through interaction, is found in 3.2.4 and 3.2.5.

Finally, my definition above suggests that the aim of aural awareness in ensemble rehearsals is to assess the musical performance and make decisions about

how to play—how the performance can be improved. Assessing music implies being critical. As mentioned earlier, Cargill and Pratt (1991) included criticism in their teaching of their music students so that they became aware of the *criteria* they use to form their opinions. Pratt (1998) discusses further exercising of such critical judgment as a kind of end point for aural awareness in relation to musical performance. He says:

> The primary aim, [now], is to apply critical judgement to our observations, to add a further stage to the process of developing our perceptions to the highest level we can. First, observe the effectors—what happens in the music. Then determine the effects—the creation of tension and release. Finally, criticize the effects—how far they are desirable (Pratt, 1998, p. 84).

What Pratt points out is that being critical depends on both knowledge (about the effectors) and personal taste (how far they are desirable), which is underlined by the different forms of knowledge above. When bringing on the introductory perspectives of past, present, and future sounds, one could therefore say that being a critical listener in a rehearsal setting is about *comparing* the musical performance provided by the ensemble with the ideal performance imagined in the musicians' minds. When such comparisons take place during an ensemble rehearsal they may become available knowledge resources, in particular if they are shared through negotiation.

3.3.4 Focal and subsidiary awareness

When defining the concept of aural awareness in ensemble rehearsals in 3.3.3 I discussed how Pratt (1998) emphasizes the importance of synthesis after analysis, asserting: that, although attention should be directed to different elements of musical expression, it is essential to put it back immediately into the context of real music. Although this is primarily practical advice, it carries with it some assumptions about *in what ways* it is possible to be aurally aware. It assumes on the one hand, that it is possible to examine the elements of musical expression closely through analysis, and on the other hand, that it is possible (and advisable) to view the music as a whole through synthesis.

Polanyi's (1958) distinction between "focal awareness" and "subsidiary awareness" might be helpful in this respect. In order to explain the difference between the two forms of awareness, he uses the example of driving in a nail by the strokes of a hammer: "When we bring down the hammer we do not feel that its handle has struck our palm but that its head has struck the nail" (p. 55). Polanyi's point is that we have a subsidiary awareness of having the hammer in

the hand and a focal awareness of driving in the nail. He then argues that these two kinds of awareness are mutually exclusive, and exemplifies it this way:

> If a pianist shifts his attention from the piece he is playing to the observation of what he is doing with his fingers while playing it, he gets confused and may have to stop. This happens generally if we switch our focal attention to particulars of which we had previously been aware only in their subsidiary role (Polanyi, 1958, p. 56).

In this example of the pianist's awareness, Polanyi claims that it is probably a matter of self-consciousness and perhaps stage fright that causes the focal attention of the pianist's fingers. However, he underlines that our attention only can hold one focus at the time, and that it would be "self-contradictory to be both subsidiary and focally aware of the same particulars at the same time" (p. 57). For example, when reading one is subsidiarily aware of the words as such because one is focally aware of the meaning in the text. Transferred to a musical setting one could say that when playing and listening one is subsidiary aware of each note and focally aware of the music. On the other hand, when *rehearsing* and listening, the focal awareness is shifting between the music heard as a whole and music heard in its constituents. When musicians in an ensemble are working on solving a musical problem, they go deep into one particular element of musical expression for a while. When they do that, they have a focal awareness of that element.

It is important to note that Polanyi's examples have the individual as a starting point. In this chapter, I have argued that there is a need to view the concept of aural awareness in ensemble rehearsals as collective, because this study is anchored in a sociocultural view of learning. In the same way, it is necessary to bring the concept of collective awareness to Polanyi's focal and subsidiary awareness, in order to give them meaning in the present study. A specific challenge in ensemble rehearsals may well be that someone has a focal awareness while somebody else has a subsidiary awareness. For example, this might happen when an ensemble is playing music, they stop, and then all the musicians have different suggestions on what they should be working on—which means their focal awareness has been directed towards different aspects of the musical performance while they were playing. When constructing a Joint Problem Space the ensemble has to decide what the focal awareness should be directed towards *right now*. If the focal awareness is directed towards the tuning of the final chord in the movement, the chord progression in the previous bars is one of the musical aspects that get subsidiary awareness in this moment of the rehearsal. Hence, an important aspect of bringing the

perspective of collective thinking to Polanyi's two kinds of awareness is to recognize the need of coordinating the different individual experiences of aural awareness into a collective awareness that can be negotiated.

3.3.5 Aural awareness of *what*?

In this section, I discuss more in detail *what* aural awareness in ensemble rehearsals can be directed towards. Within the definition of Joint Problem Space (see Roschelle & Teasley, 1995 and 3.2.6) making "descriptions of the current problem state" is one of the tasks integrated. This means that an important part of the ensembles' negotiation is aimed at defining what they need to work on. Being able to discuss different aspects of the music and their musical performance may be helpful in this respect. Yet, how such elements of music" are described depends on a variety of factors such as musical genre, musical context, and subject area. In the present study, which deals with classical chamber music, I draw on Vea's (1981) compilation of musical elements and Pratt's (1998) elements of musical expression, in order to discuss what the participating ensembles direct their aural awareness towards.

According to Vea (1981, my translation) "the elements of music" consist of "sound progressing in time, elementary rhythms, melodies, timbres, dynamics, tempo, articulation, simultaneity, energetics, and form." Pratt's (1998) "elements of musical expression," are "metre, rhythms, pitch, texture, timbre, compass, range, density, dynamics, articulation, placing in space, pace and structure." Neither of these lists are exhaustive. But I include them to give examples of what ensembles may suggest working on when they are to describe their current problem state. For example, does a problem relate to tempo or articulation? In the process of analyzing the data in the present thesis I have therefore used Vea's and Pratt's concepts as a point of reference in order to describe what the ensembles are working on.[31]

Both Vea and Pratt seem to focus on what I would call content-aspects, as well as performing-aspects of music. By content-aspects, I mean fixed parameters written in the score, for example meter or pitch. By performing-aspects, I mean non-fixed parameters, such as timbre, which may or may not be written

31 A thorough description of how I report these findings will be presented in 4.8, and in Part II the musical elements are recognized in the analysis of each ensemble rehearsal.

in the score. Both kinds of aspects can be negotiated within an ensemble, but the negotiations may have different goals. When it comes to content-aspects it is likely that the negotiations concern playing the music more "accurately," according to what it says in the score, and that the goal is to increase the ensemble's common understanding of the meter and play more "together." As regards performing-aspects, on the other hand, it is likely that the negotiations concern questions of interpretation: should the timbre of this chord be dark or light? The goal of such negotiations may also be about achieving a common understanding of how to perform the music; but it demands not only that the students share their opinions, but that they are creative.

These two kinds of aspects can also be seen in relation to higher music education, and what the students are trained to listen for within the different subjects or departments. A criticism that might be made about many aural training courses in that regard is that they are (or have been) too focused on the enhancement of isolated aural skills, and perhaps mostly related to content-aspects. Pratt (1998), for example, found that many musicians in England considered the aural training subject to be irrelevant. Pratt blames this on the educational system, which invites the content of a subject to be determined by whether or not it can be assessed or measured:

> For example, if someone plays you a 'D' on the piano and you write it down accurately by relative or perfect pitch, you can be awarded a mark for it. But no-one can award you mark for perceiving the balance and tone-quality of that same 'D' at the opening of Beethoven's Second symphony (Pratt, 1998, p. 1).

Although Pratt is criticizing aural training teaching in England here, his comments are also a reminder of the different aspects of music toward which one can direct the attention. An instrumental teacher in higher music education would perhaps have expressed quite the opposite point of view: if you can perceive the balance and tone-quality of the opening D in Beethoven's second symphony you can be awarded a good mark. The fact that it is a D is anyway noted in the score.

In the present thesis, I therefore want to emphasize that I understand musical elements to have both content- and performing-aspects. I have included this section to pave the way for multiple dimensions of music—dimensions concerning what it says explicitly in the score (e.g. rhythms), and dimensions that are normally implicit in the score (e.g. timbre or tension). Rather than combining to form an exhaustive overview of what aspects aural awareness might be directed towards, my evidence from Vea and Pratt has been intended to open up

a space for variety when it comes to what ensembles may describe as a current problem state, what such problem states may hold, and what kinds of concepts the ensembles might use in their negotiations.

3.4 Summary

This chapter has taken as a starting point that ensemble rehearsals are characterized by collaborative, negotiating, and problem-solving activity.

Through the analytical lens of sociocultural theory of learning, ensemble rehearsals are seen as a musical practice situated in a cultural, historical, and institutional context. The concepts of tools and knowledge resources, as well as perspectives on how these are shared through social interaction and participation in joint problem-solving processes further inform the research questions.

The view of collective aural awareness draws on the sociocultural framework, but also on some psychological aspects. The proposed definition refers to aural awareness in ensemble rehearsal as the ensemble's attentiveness, the sharing of ideas from their minds' ears, and the utilization of available knowledge resources, in their process of assessing a musical performance and deciding how to play. In addition to providing this definition, I have explored focal and subsidiary awareness, as well as what the awareness can be directed towards during an ensemble rehearsal.

4 Methodology

The present research study is a qualitative, collective, and instrumental case study, in which three chamber ensembles from the Norwegian Academy of Music (NAM) have participated: a string quartet, a clarinet trio, and a piano trio, all playing Western classical music. Data has mainly been collected through video observations of the ensembles' rehearsals, and through focus group interviews in which video excerpts from the rehearsals constituted an important part.

In this chapter I describe methodological considerations about design, methods for data collection, selection and recruitment of participants, the fieldwork, analytical approaches, trustworthiness, transferability, ethical questions, and finally how I present the findings.

4.1 A qualitative case study

This research study explores in what ways undergraduate music students are aurally aware during ensemble rehearsals, and how their aural awareness influence their collaborative efforts to improve their playing. To gain insight in this matter a qualitative approach seemed appropriate. According to Denzin and Lincoln (2005) "Qualitative research seeks to grasp the meaning of phenomena in their natural setting" (p. 3). In the present research study, aural awareness is the phenomenon to be studied, and the natural musical setting I have chosen to explore is ensemble rehearsals in higher music education. I consider these rehearsals to be a kind of "imaginary practice" (Nerland, 2003, p. 67; Popkewitz, 1994)—an imitation of how ensemble rehearsals might take place in the real

working life. As Popkewitz and Nerland emphasize, though, imaginary practices will always be different from what one seeks to imitate. This is illustrated in the present study, in which the students' ensemble rehearsals can be seen as an imaginary practice primarily in a professional or vocational perspective. What *is* similar to professional life is that the students' rehearsals take place without a teacher, and that the rehearsing ends in a concert, as it would in professional life. What is different is that they follow a curriculum and that they are also having lessons with an assigned chamber music teacher. In this way, the ensemble rehearsals at NAM differ slightly from imaginary practice as described above, but they do fulfill the criteria of a natural setting seen in an educational and a research perspective.

Another argument for regarding the chamber music rehearsals as 'natural settings' is that the rehearsal-situation itself has not been constructed by me as researcher. I assume the students would have joined the same groups, played the same repertory, and arranged rehearsals even if they had not been participating in the research study: "Hence, the research material comes from human practices that would have taken place regardless of the researchers' presence […]" (Kamsvåg, 2011, p. 73, my translation).[32]

Ensemble rehearsals in undergraduate studies are a group activity, and the delimitations in participants, purpose, time, and place make the rehearsals well suited for a qualitative case study. Hence, a case study design was chosen in order to explore the research topic. Yin (2009) defines a case study as "an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p. 18). What I seek to investigate in depth in the present study is the phenomenon aural awareness, and the real-life context is ensemble rehearsals. The boundaries between aural awareness as a phenomenon, and ensemble rehearsals as a performance activity, are not clearly evident. As discussed in the previous chapter, I have chosen to investigate aural awareness in ensemble rehearsals through a sociocultural perspective. This approach has contributed to making the boundaries between phenomenon and context clearer in the present study, but it also confirmed there *were* some unclear boundaries, which made it an even better case study according to Yin's definition.

32 See appendix 1 for original Norwegian.

In order to shed light on the problem and research questions in the study with a certain variety in data I decided to include more than one participating ensemble. Hence, I use the term "collective case study" (Stake, 1994). Furthermore, because the study seeks information about a specific topic it is also what Stake (1994) calls an "instrumental case study", as opposed to an "intrinsic case study" (p. 237).[33] In an instrumental study the cases play a supportive role, *facilitating* the understanding of something else. In the present research study the ensembles are facilitating my understanding of aural awareness in ensemble rehearsals.

All research designs are vulnerable in some way. Participation is one element of uncertainty. In the present study, one ensemble decided to withdraw because they did not have time, another ensemble was considering withdrawing because of time pressure in their studies, and one participant had to withdraw of medical reasons. Another element of uncertainty is that I, as a researcher, have had little influence on the students' timing; I have patiently waited for the students to arrange rehearsals in order to collect data. On the other hand, by observing and talking to a limited number of ensembles over a sustained period, I have gained different kinds of insights than I might have if I had had fewer meetings with a larger sample of ensembles. For example, I have learned a lot about the ensemble rehearsals and the chamber music subject as a cultural practice at NAM. Such personal insights in a practice is something I consider to be a real advantage of case studies and qualitative research, and a premise for being able to get an in-depth understanding of the research matter.

4.2 Methods for data collection

In order to explore the research questions from different viewpoints I chose two main methods for data collection: video observations of rehearsals and focus group interviews. The combination of observations and interviews is traditionally used within for example ethnographic research methods:[34]

33 Within "intrinsic" studies the particular case is of specific interest (Stake, 1994, p. 237).

34 The present study is not ethnographic in the sense of an anthropological approach; in which the researcher participates in a local community for a longer period. However, the present study makes use of ethnographical research methods (Balsnes, 2009).

> In multimethod uses, focus groups typically add to the data that are gathered through other qualitative methods, such as participant observation and individual interviews. The model here is clearly ethnography, which has traditionally involved a blend of observation and interviewing. […] In these combined uses of qualitative methods, the goal is to use each method so that it contributes something unique to the researcher's understanding of the phenomenon under study (Morgan, 1997, p. 3).

Within case studies, such a "triangulation" of methods is highly recommended (Yin, 2009, p. 114), and in the present study I mainly seek a triangulation of the video observations and the focus group interviews. The video observations are closely linked to the two research questions, and they provide data about how aural awareness is part of the ensembles' problem solving and what kinds of tools the ensembles share. The focus group interviews clarify and comment on the video observations, and they also provide important data about the comprehensive research problem: the ways in which the ensembles are aurally aware during their rehearsals. Both data sources inform the overall aim of the study: to understand the roles and characteristics of aural awareness in ensemble rehearsals. The reciprocally informative relationship between the two data sources can be seen in figure 3.

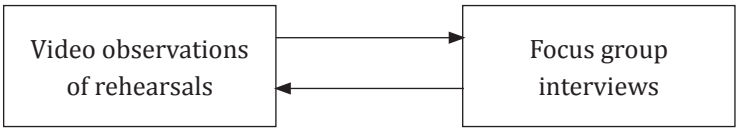

Figure 3: Reciprocally informative relationship between video observed rehearsals and focus group interviews.

Figure 3 suggests a "convergence of evidence" (Yin, 2009, p. 117), which means the data is actually triangulated:

> When you have really triangulated the data, the event or facts of the case study have been supported by more than a single source of evidence; when you have used multiple sources but not actually triangulated the data, you typically have analyzed each source of evidence separately and have compared the conclusions from the different analyses—but not triangulated the data (Yin, 2009, p. 116).

In the present study, the two data sources offer different angles on the same research problem and research questions, and the analysis of these data sources

have therefore been interwoven, with the purpose of triangulation. In addition to conducting video observations and focus group interviews, I have observed each ensemble having one lesson with their assigned chamber music teacher. This data source made it easier to understand the rehearsal negotiations that concerned suggestions from their chamber music teacher. The observations of lessons have therefore also had a triangulating function, in explaining some aspects of the two other data sources.

4.2.1 Video observations

My use of the term "video observations" emphasizes that I have video recorded as well as observed ensemble rehearsals. Observations were chosen as a method for data collection in order to get insight into the natural setting of students' ensemble rehearsals and their problem-solving processes. By observing, I hoped as well to create a good starting point for a discussion in the following focus group interviews, though I was constantly aware that my observations could not tell me "everything." Yet, according to Handley (2008) "thoughtful and judicious use of observational methods provides one of the most effective ways to begin to understand what goes on in naturalistic settings."

In the present study I observed the ensemble rehearsals by staying in the "background." I sat on a chair by the video camera, some meters away from the ensemble. My attention, as well as the camera lens, was directed towards the "front" of the ensemble. I never participated, interrupted, or spoke during a rehearsal, apart from a couple of times when the students addressed *me*. Most of the time I was totally quiet; occasionally I made a few field notes. These notes contained practical details about the date and which movement the ensemble was rehearsing, as well as thoughts and ideas about the research study in general; they were primarily used in the early steps of my analysis.

This kind of observational role is not easily "labeled." Since I was not participating in the musical activity as an equal group member, I cannot be labeled "participant observer." On the other hand, I *was* participating merely by being present, and I did interact with the informants; I talked to them when the video camera was switched off, both before and after the rehearsals. These conversations did not really inform the project, but I was indeed interacting with the participants, and I was participating in their ensemble rehearsals in some way. Bryman (2012) suggests a continuum with degrees of ideal-typical forms of participant observation: covert full member, overt full member,

participating observer, partially participating observer, minimally participating observer, and non-participating observer with interaction (pp. 440-445). My role in the present study is closest to that of "partially participating observer." This is described as participation in the core activity, but not as a full member. Moreover, interviews and documents can be as significant as observation within this form of approach (Bryman, 2012, p. 443).

I could have chosen not to be present during the rehearsals at all, leaving the students in charge of the video camera. Then I would only have been an observer to the video recordings, which would have made me a "non-participating observer with interaction," according to Bryman (2012). However, I decided to be present, because I did not want to hide the researcher. If I had not been present in the rehearsals, the students might have experienced me as a stranger in the following focus group interviews. In addition to being present, I made video recordings, even though I knew it would draw attention. Video recordings are often considered as having a greater impact on the setting than the presence of a researcher alone:

> Working with a camera in the field, there is always a focus on your presence, your doings, on all your tasks, to a greater extent than when the anthropologist takes notes […] (Møhl, 2003, p. 166, my translation).[35]

From a practical perspective, however, video recordings were necessary because I planned to use them as stimulus material in the focus group interviews (Wibeck, 2000, pp. 78-79). Also, from an analytical perspective the video recordings turned out to be a valuable data source, giving me the opportunity to watch the rehearsals several times and to go into detail about all the rehearsals:

> Observing in the field with a help of video makes it possible to document real events and support the memory. Video observation also makes it possible to "see" connections between actions, movement and expression, which otherwise are hidden from the naked eye (Rønholt, Holgersen, Fink-Jensen, & Nielsen, 2003, pp. 15-17, my translation).[36]

With the video observations it was therefore possible to analyze the ensembles' aural awareness in real depth, and to spot details in their verbal, non-verbal, and musical negotiations that I could not have noticed by observing the rehearsals only once.

35 See appendix 1 for original Danish.

36 See appendix 1 for original Danish.

4.2.2 Focus group interviews

Focus group interviews were chosen as an additional method of data collection for several reasons. One was to contribute to triangulation of data, and thereby to complement the video observations. Another reason was to allow me the opportunity to adjust some of my impressions from the rehearsals, and a third reason was that focus group interviews could reveal some of the students' attitudes and comprehensive ideas about what aural awareness is, and in what ways they are aurally aware in their ensemble rehearsals.

Morgan (1997) defines focus groups as "a research technique that collects data through group interaction on a topic determined by the researcher" (p. 6).[37] The researcher is mainly there to make sure the discussion is fruitful and to the point:

> As a form of qualitative research, focus groups are basically group interviews, although not in the sense of an alternation between the researcher's question and the research participants' responses. Instead, the reliance is on interaction within the group, based on topics that are supplied by the researcher who typically takes the role of a moderator. The hallmark of focus groups is their explicit use of group interaction to produce data and insights that would be less accessible without the interaction found in a group (Morgan, 1997, p. 2).

The focus on group interaction means that listening to the other participants, interrupting, and perhaps changing one's own opinion during the interview are important features of a focus group interview. A disadvantage is the possibility of "group-think" (Wibeck, 2000, p. 31). If the participants experience solidarity to a great extent it may suggest that only one way of thinking is acceptable. Other elements of influence might be the personality of the participants, compatibility within the group, and hierarchical challenges regarding power of definition (Wibeck, 2000).

In focus group interviews, "stimulus material" is used as a way of initiating a discussion. Such stimulus material might be articles, citations, pictures, video or something else related to the interview topic (Wibeck, 2000, p. 79). In the present study I chose to present video excerpts from the students' own rehearsals as stimulus material. The overall aim of using stimulus material was to create fruitful starting points for discussions about aural awareness in

37 This is an inclusive approach, yet Morgan (1997) also refers to schools of thought that want an exclusive approach, emphasizing the importance of defining what kinds of group interviews are actually focus group interviews and what kinds are not (p. 5). In this thesis I use the term focus group in accordance with Morgan's inclusive definition.

ensemble rehearsals. They also received an instruction (see appendix 2), asking them to choose one episode from the video in which they were aurally aware in a good way, and another episode in which they might have been aurally aware in a different way. The instructions also asked the students to look at the score of the piece they were rehearsing and think about how they were aurally aware in their personal practicing process.

When shaping the stimulus material I started with four to six hours of video recordings of each ensemble. In an ideal world, the participants would have had the time to watch all this video footage in order to form a picture of how they rehearsed. In practice, this was not an option. Instead, I extracted five to six scenes from the rehearsals of each ensemble as part of the first level of my video analysis (see 4.5). According to Rønholt (2003) one of the first tasks in video analysis is to note incidents that catch special attention. The episodes that caught my attention the first time I saw the video recordings were thus connected to my focus on the overall problem for discussion in the study: in what ways the students are aurally aware during their ensemble rehearsals. Furthermore, the excerpts were chosen according to the following principles: they had to show a problem-solving process within the group, for example performance of a section of music, then the following negotiations within the ensemble, and then how they performed as a consequence of these negotiations. A couple of excerpts were chosen from each rehearsal.

The video excerpts were distributed to the students in advance, for two reasons. First, because I assumed it would be better for them to watch the video alone for the first time, rather than together with the other ensemble members. Watching how one plays and what one says on video can feel very personal. A second reason for distributing the video excerpts beforehand was to give the students the opportunity of forming their own opinions to bring with them to the focus group interview.

4.3 The participants

4.3.1 Selection

The participants in the present research study comprise a “purposive” sample (Miles & Huberman, 1994, p. 27). I decided early in the process that

the participants should be recruited from NAM. Recruiting informants within the institution I work gave me the opportunity for a close follow-up with the ensembles. Being able to attend rehearsals on short notice turned out to be crucial.[38]

Aural awareness may have quite different purposes in different contexts; for example, it may play a different role when playing from a score than when improvising. I therefore decided to narrow the research study down to include students playing notated, classical music.[39] Hence, the first selection criterion was that the ensemble's curricula included the chamber music course. A consequence of this choice was that only two study programs were of current interest: the "Bachelor's in music performance" and "Bachelor's degree programme in music teacher education" (NAM, 2013c).

As a further circumscription, I decided to limit the number of different instruments represented within the study. It was important to me that the combinations of chosen instruments could provide typical ensembles, and it was an aim that the students' aural awareness was approximately similar in a rehearsal situation. Originally, I therefore wanted to concentrate on melodic instruments: strings and winds. However, because a great deal of the actual chamber ensembles at NAM turned out to include pianists, I decided to expand the selection criterion to consist of string players, wind players, and pianists.

The size of the groups was important, because I wanted each participant to get a word in during both the observations and focus group interviews. According to Morgan and Scannell (1998) six to 10 people are recommended in a focus group, yet, smaller groups are recommended when the participants are very involved in the topic and the aim is to obtain an in-depth understanding of what the participants have to say (p. 71). I used this as a guideline and decided to select ensembles with the size of three to five members. Hence, the third selection criterion was that chamber music groups had to be trios, quartets, or quintets.

38 If I had recruited informants from other institutions in Norway, or from institutions abroad it would have been more difficult to organize the observation of several subsequent rehearsals. Also, the ensembles sometimes decided their rehearsal times quite suddenly, sometimes in a day's notice.

39 In the introductory selection process, I did not know how many ensembles would wish to participate. In order to ask as many ensembles as possible to participate in the study, ensembles playing contemporary music also received an invitation. However, none of these ensembles expressed an interest, and the overall genre across the participating ensembles turned out to be from the core tradition of Western classical music.

As a fourth criterion, I wanted the participants to have attended at least one year of aural training, as a common point of reference. This implied that only the students in their second, third, or fourth year were of interest for selection.[40]

4.3.2 Recruitment

I found out that NAM's existing lists of ensembles within the chamber music course was the best way to get hold of potential participants for the research study. Going through this list, I found that 20 ensembles fulfilled the selection criteria, and I sent these an e-mail with an invitation to participate (see appendix 3). I also visited the students' aural training classes with information about the research project. Three groups volunteered and a fourth group signed up after being encouraged by their aural training teacher.

However, the fourth group withdrew, when they realized they did not have the time needed for participation. This happened a rather long time after they signed up, and I had not even started to observe their rehearsals. I therefore chose not to replace this ensemble; partly because their withdrawal came at a point in which I was about to finish my field work, and partly because I assumed that three ensembles would provide enough rich information. Moreover, I considered the *number* of cases in a collective case study not to be crucial for the study's trustworthiness, because generalization as such is not an aim.

The study therefore had three participant ensembles:

- A string quartet consisting of second year students
- A clarinet trio consisting of third year students
- A piano trio consisting of fourth year students

These ensembles and their repertory will be thoroughly presented in Part II of the thesis.

4.4 Fieldwork

The fieldwork was organized in two phases. First, I conducted three video observations of each ensemble's rehearsals, and an observation of one chamber music lesson with each ensemble. Then, a focus group interview was conducted with each ensemble.

40 At NAM a bachelor's degree is four years.

4.4.1 Trial observation

To be confident that I was prepared for the video observations, I conducted a trial observation of a wind quintet. The participants were recruited the same way as the participants in the main study: e-mails were sent to chamber ensembles at NAM that fulfilled the criteria. Carrying out the trial observation gave me insight into practical matters, as well as confidence in choosing this kind of data collection method. The students were generally positive about the video camera and they claimed to forget I was there. Yet, it is important to be aware of potential discomfort, and I discuss this matter further in the next section. Doing the trial observation also made me decide to observe a series of three rehearsals, in order to see several stages in their rehearsal process. Finally, I did a trial analysis, trying out a model for video analysis (see 4.5.3). This model proved to be a fruitful way of analyzing video, but it needed some adjustments.

4.4.2 Doing video observations

The video observations were carried out at NAM. I did three observations of each ensemble, with each rehearsal lasting between one and two hours.[41] All the rehearsals were video recorded and sound recorded.[42] I also made field notes. In order to remain focused on the research topic I made an observation guide to guide me during both the fieldwork and the early analyses of the video recordings. The observation guide focused on these aspects:

- what kinds of musical problems the students face and choose to work on
- what kinds of strategies they use to solve problems
- what kind of vocabulary they use
- how they interact
- whether there are elements of music they rarely touch upon
- whether the strategies they use to solve musical problems is in accordance with strategies taught in aural training
- whether they discuss different problems during different stages in the rehearsal process

41 I observed four rehearsals with the piano trio, due to technical problems in connection with the third recording.

42 Video camera: Canon Powershot G12. Sound recorder: Zoom H4n Handy 4-channel Recorder. The sound recorder was used for backup purposes as well as because it has better microphone quality than the video camera. I used a special software program (Dual Eyes) to synchronize the two data sources, in order to achieve the best possible sound quality in the recordings I used for analysis.

As the observation guide shows, these aspects are quite open, and I did not look specifically for their construction of Joint Problem Spaces or their sharing of tools; these were analytical categories I used later in the process.

Table 1 shows the schedule of the rehearsals.

	Rehearsal 1	Rehearsal 2	Rehearsal 3	Rehearsal 4
Case A The string quartet	October	November	March	
Case B The clarinet trio	November	May	May	
Case C The piano trio	October	November	November	November

Table 1. Overview of the video observed ensemble rehearsals.

With the string quartet, I observed three rehearsals in a time frame of five months, with the clarinet trio the rehearsals took place in a time frame of six months, and with the piano trio all four rehearsals took place in a time frame of one month.

My original intention was to observe a series of three rehearsals within two or three months. However, this was not possible in practice, and the data collection process was shorter with the piano trio and longer with the other two groups. The string quartet and the clarinet trio told me that one reason for the time frame over which their rehearsals were spread was that the amount of work in their study made them give the chamber ensemble lower priority from time to time. It was very important to me that the ensembles decided the time of their rehearsals themselves, and I waited until they were ready. In retrospect, there were no problems with a larger gap between some of the rehearsals, probably because the students picked up where they left off, regardless of how long it had been since their last rehearsal.

The conditions for observation of the chamber music *lessons* were the same as for the rehearsals, except that I did not video record the lessons, but restricted myself to field notes. The main reason for not recording was that the research focus in this study is on the students' rehearsals and how they work when no teacher is present. I attended one lesson each with the string quartet and clarinet trio. The piano trio, however, invited me to two of their chamber music lessons and I attended both.

4.4.3 Conducting focus group interviews

The focus group interviews were conducted at NAM as soon as possible after the last rehearsal I attended. Because the ensembles' workload varied, the gap between the last rehearsal and the focus group interview varied from two weeks with the clarinet trio and the piano trio, to two months with the string quartet. The interviews were both sound and video recorded, so that I could see who was talking when I did the transcriptions and analyses. I also made a small amount of field notes, which mostly included additional key words for discussion. Each focus group interview lasted between one and two hours.

In preparation for the focus group interviews I made an interview guide (see appendix 4), consisting of questions classified in categories suggested by Krueger (1998a, p. 21): opening questions, introductory questions, transition questions, key questions, and ending questions. This design was helpful in deciding the content, articulation, and order of the questions. I therefore decided to open the focus group interview by asking how they felt about having a video camera in the rehearsals, then moving to the video they had seen (the stimulus material) and the excerpts they had chosen as introductory questions. As a transition question I used an activity (Krueger, 1998a, p. 63): I asked them what they thought it means to be aurally aware in ensemble rehearsals, and then I gradually listed their answers on the whiteboard. Moving on to the key questions, I used only the interview guide to moderate the discussion. As the end of the interview approached, I used the ending questions I had planned, making sure they had nothing more to say, as well as asking if there were any advice they wanted to give me before my next focus group interview.

Some linguistic challenges arose, because I conducted the focus group interviews in Norwegian and the thesis is written in English. One of the key concepts in the thesis, "aural awareness," cannot easily be translated. In Norwegian, one would usually use the term *gehør*, deriving from the German term *gehör*. In order to get closer to "aural awareness" one could talk about *using* your *gehør*. This turned out to be my solution to the problem in the focus group interview conversations. As I will emphasize later on, I have been very much aware of the linguistic challenges related to the presentation of the findings.

4.5 Analytical approaches to the data

The data collection left me with video recordings from the ensemble rehearsals and focus group interviews, observations from the chamber music lessons, and field notes.[43] As an overarching analytical approach, I used reflexive interpretation, which will be described in 4.5.1. I also used more specific approaches when analyzing the different data sources. These are described later in this chapter.

Before moving on, I want to pose a more general question regarding analysis: when does an analysis begin? Several answers point in the same direction: "There is no particular moment when the data analysis begin" (Stake, 1995, p. 71), or "[a] distinctive feature of qualitative inquiry is that data gathering and data analysis are simultaneous activities" (Krueger, 1998b, p. 12). In a qualitative study the data analysis is very often built into the data collection process itself, a form of interpreting "as-you-go" (Kvale & Brinkmann, 2009, p. 190). This as-you-go analysis shares similarities with a reflexive research strategy; both offer flexibility, making it possible, for example, to reflect on parts of the data before moving on with the data collection process. In the present study the as-you-go analysis has been a fruitful supplement to reflexive interpretation, because it has a practical function in the fieldwork. For example, the as-you-go analysis has led to further development of my interview guide and my analytical categories on the way.

When analyzing empirical data there is another fundamental question that needs to be posed: what can analysis actually reveal? My answer is that I interpret data from the observations and interviews *the way I saw it*, and *the way I heard it*. However, I have an aim of interpreting the data from a researcher's perspective, and at the same time try to understand the participants' perspective, parallel to the way Gadamer (2003) suggests we understand a text:

> When we try to understand a text, we do not try to transpose ourselves into the author's mind, but if one wants to use this terminology, we try to transpose ourselves into the perspective within which he has formed his views (Gadamer, 2003, p. 292).

43 There are field notes from all the rehearsals, all the chamber music lessons, and all the focus group interviews. The notes are 1–2 handwritten pages. The field notes will not be an object of further discussion in this thesis, as they turned out to be important only in the early analytical phase. Neither will the observed chamber music lessons will be an object for further discussion, as they turned out not to inform the research problem or research questions.

In order to interpret how the ensembles in this study are aurally aware during their rehearsals I have tried to see the "world" from their perspective, while bringing my own preconceptions and theoretical overview.

4.5.1 Reflexive interpretation

As already mentioned I have used reflexive interpretation as an overarching analytical approach. Alvesson and Sköldberg (2009) distinguish between "reflection" and "reflexivity" in the way that they view reflexive research as a particular and specified version of reflective research, involving reflection on several levels (p. 8). This means they consider reflexive interpretation as the framework, while reflection, and the movement between reflective themes, is the activities going on *inside* this framework. Alvesson and Sköldberg describe the reflexive framework this way:

> It is [...] a framework for drawing attention to and mediating between various core dimensions for reflection, for initiating acts of reflection and maintaining movement between reflective themes. The framework gives multi-level reflective activities a certain structure and systematization. Reflection occurs when one mode of thought is confronted by another (Alvesson & Sköldberg, 2009, p. 271).

Alvesson and Sköldberg view reflexive interpretation as a way of indicating the open play of reflection across various "levels of interpretation" (p. 271). This concept underlines their main point about reflexivity: that reflection takes place on multiple levels. In their example, one level includes interpretations close to the empirical data, and another level includes interpretations close to academic theories. Alvesson and Sköldberg emphasize that this is an example, but they also claim that they consider these four levels of interpretation as major elements in reflexive interpretation in general (p. 317), as shown in table 2.[44]

Another key aspect of reflexivity is that these levels are reflected in one another (p. 271), and that reflexivity arises when the different levels are "played off against each other" (p. 272). In my understanding, the movement between levels does not necessarily take place in any particular order. In fact, the levels of interpretation in the present study are rather "layers" of interpretation.[45] In

44 However, they also make very clear that levels of interpretation in a reflexive research study can be decided and directed by each researcher. In fact, they claim it could be any intellectual resource (Alvesson & Sköldberg, 2009, p. 271).

45 This understanding is inspired by the authors' Swedish edition (Alvesson & Sköldberg, 2008), in which they talk about levels of interpretations as 'layers' of interpretations: *tolkningsskikt* (p. 490).

any case, it is the interactive processes that constitute and characterize reflexive interpretation and thereby "the play of interpretive levels" (p. 263). This design with levels of interpretation may seem like a tight structure. However, I want to underline that there has been a strong degree of interpretive play between the levels in the present study: between empirical information, theoretical approaches, educational-political dimensions such as curricula, and critical reflection of my own research process and text production. This play cannot be captured accurately in a written text, given that a research process is circular and a textual presentation is linear.

Aspect/level	**Focus**
Interaction with the empirical material	Accounts in interviews, observations of situations and other empirical materials
Interpretation	Underlying meanings
Critical interpretation	Ideology, power, social reproduction
Reflection on text production and language use	Own text, claims to authority, selectivity of the voices represented in the text

Table 2. Four levels of interpretation (adopted from Alvesson & Sköldberg, 2009, p. 273).

4.5.2 D- and R-reflexivity

When discussing the practical applications of reflexivity, Alvesson and Sköldberg suggest two kinds of emphasis in reflexive research:

> One is to avoid or minimize naïve and problematic elements in research work, the other is to see new and interesting possibilities. In other words, the ideas are about how to increase 'reflexive rigour' and to work more creatively (Alvesson & Sköldberg, 2009, p. 312).

Questioning concepts and theories that might be taken for granted within a subject area can help avoid naïve elements. Alvesson and Sköldberg call this D-reflexivity, in which the D stands for deconstruction, defensive and destabilizing (p. 312). In their example, dividing the population into men and women might represent such a naïve approach.

R-reflexivity, on the other hand, stands for reconstruction and re-presentation, and is about developing and adding something, providing alternative descriptions, or reframing (p. 313). In Alvesson and Sköldberg's example above, the

R-reflexivity would suggest other ways of interpreting gender than dividing into men and women.

In the present research study, I refer to "deconstruction" and "reconstruction" in order to minimize the number of terms used in the text. These terms are used actively in part II of the thesis, in the analysis and discussion of the empirical data. For deconstruction purposes, I use the definition of aural awareness as described in chapter 3 and for reconstruction purposes, I use the sociocultural understanding of "tool," also described in chapter 3. This process of first deconstructing, and then reconstructing or reframing something, is in line with Alvesson and Sköldberg's suggestion of a dialectic relation between D- and R-reflexivity: "This means moving between tearing down […] and then developing something new or different" (Alvesson & Sköldberg, 2009, p. 313). In the analyses and discussion of the empirical data I have therefore used the aural awareness definition to tear down the data, and the theory of tools to understand the data in a new and different way.

4.5.3 Analyzing the video observations

The fact that I was able to watch the videos over and over again made it possible to gain continual new insights, and to be focused on different aspects of the ensemble rehearsals. First, I could get an overall impression of each rehearsal and note incidents that were catching my attention. Then, I could use the observation guide again, and look more specifically at their problem-solving processes. Finally, I could make use of the theoretical perspectives and look for how they constructed and maintained Joint Problem Spaces and how they shared tools. As opposed to field notes, which are taken from one perspective and dependent on how the researcher interprets the situation at the time, video recordings make it possible to discover new perspectives and a number of understandings. According to Rønholt (2003), recordings are constantly open to interpretation (p. 126).

In the following, I explain how I have used a combination of video analysis and content analysis.[46] Rønholt's (2003) model of how one can approach video recordings has been useful in that respect. She emphasizes that video recordings are raw material that need to be transformed into data before it can be analyzed, and her model consists of four analytical levels: (1) Registration of

46 "Content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (Krippendorff, 2004, p. 18).

recordings and experiences, (2) Interpretation and reconstruction, (3) Text analysis and conceptualization of a phenomenon, and (4) Thematizations, theorizations and didactical reflection (Rønholt, 2003, pp. 129-135, my translation). These analytical levels partly overlap with the levels of interpretation suggested by Alvesson and Sköldberg (2009). I have therefore used only the first *two* of Rønholt's (2003) levels, because these comprise practical suggestions for systematizing the data.

On the first analytical level Rønholt (2003) suggest that the researcher register names, date, time, and place. Activities are noted in chronological order, and incidents that catch special attention are also noted. At this point, an intuitive and random interpretation process has begun, because the analytical categories are not yet developed, and this makes it possible to keep an open and curios mind (p. 131). I started working on Rønholt's first analytical level after each video recorded ensemble rehearsal: I made a chronological overview of the rehearsal, noted when the students stopped (the actual time in minutes and seconds), and why they stopped, as well as noting incidents I noticed concerning aural awareness.[47]

On the second analytical level, Rønholt suggests that one should decide a superior analytical category, as well as reconstruct or transcribe selected excerpts. However, in the analysis of the ensemble rehearsals it was more fruitful to expand the descriptions of why the students stopped during the rehearsals, rather than doing full transcriptions of certain excerpts. Instead of noting exactly what they said and did, I made elaborative notes on what kinds of problems they chose to work on and how they solved them. The descriptions were written without my assessments.

Some aspects were not revealed in these two analytical levels, for instance how much time the students spent on a specific problem, or how they used their rehearsal time altogether. To analyze these aspects the data needed to be systematically organized and counted. Hence, I have used "content analysis" (Krippendorff, 2004) as an analytical gateway in order to understand:

- how often the students stop during the rehearsals
- how much time they spend on playing, and how much time they spend on talking

47 An amount of the time on an ensemble rehearsal is used on technical matters, like bowing, for example. Such problem areas have been notated as a part of the chronological log.

- how often they work on different elements of music
- how much time they spend on each problem

Content analysis has helped me to get an idea of how the ensemble rehearsals proceeded, and has been useful in the process of structuring the data. The outcome of the content analysis therefore should be seen not as findings answering the thesis' problem and questions, but rather as a prerequisite for further in-depth analyses.

4.5.4 Analyzing the focus group interviews

I will now discuss how I have transcribed and analyzed the recordings from the focus group interviews. Each focus group interview was transcribed as soon as possible after it was conducted, so that the conversation and atmosphere of the interview were fresh in my mind. Although the transcriptions were necessary as the basis for an in-depth analysis of the interviews, Kvale and Brinkmann (2009) emphasize the importance of not looking at the interviews merely as transcripts, because "the interviews are living conversations" (p. 192). This has reminded me that the recordings are the original data sources, and I have therefore set aside some time to go back occasionally during the analytical process to relive the situation.

The interviews were transcribed in full, using the data program "Hyper Transcribe." I did not leave out meaningless words and I included laughter and so on in the transcription. One of the participants spoke English in the interviews, and these statements were transcribed in English. Other participants spoke a Norwegian dialect or Swedish. These statements were transcribed in Norwegian "bokmål." A challenge when it comes to transcription of group interviews is that the participants sometimes speak all at once or interrupt each other. From an analytical point of view, these interruptions can be interesting as negotiations; but incomplete sentences and reasoning can be very difficult to transcribe. If I did not hear what the participants said, I attempted to guess what they might have said, but I have de-emphasized these particular statements in the analysis.

As mentioned earlier, the focus group interviews were conducted after the video observations, using video stimulus material from the rehearsals. However, the analyses of the focus group interviews were done alongside the analyses of the video observations. Hence, in the analytical process I specifically looked for connections between the two data sources in order to triangulate the data. My

experience has been that the video observations and the focus group interviews have complemented each other in fruitful ways.

Analyzing group interviews is somewhat different from analyzing individual interviews, because one must take into consideration the social interaction between the participants. Krueger (1998b) elaborates on this matter, by focusing on some analytical principles. One principle is to be aware that participants influence each other, that opinions change, and that some people seek to influence others. Also, silence does not necessarily imply an absence of opinion, and sometimes what is *not* said can be important. Another principle is to go beyond the words and observe all factors in the communication: body language, gestures, and tones of voice (Krueger, 1998b, pp. 20-23). Moreover, one should consider the difference between frequency (how often was it said), extensiveness (how many people said it) and intensity (how strongly the opinion or point of view was expressed) when analyzing a focus group interview (Krueger, 1998b, pp. 35-36).

According to Wibeck, Dahlgren, and Öberg (2007) a researcher analyzing empirical data derived from a focus group discussion generally categorizes the material, asking what they are talking about, with little or no focus on the interaction (Wibeck et al., 2007). Patricia E. Stevens (1996) therefore recommends adding the following questions, in order to focus the attention on interaction:

> How closely did the group adhere to the issues presented for discussion?
> Why, how and when were related issues brought up?
> What statements seemed to evoke conflict?
> What were the contradictions in the discussion?
> What common experiences were expressed?
> Were alliances formed among group members?
> Was a particular member or viewpoint silenced?
> Was a particular view dominant?
> How did the group resolve disagreements?
> What topics produced consensus?
> Whose interests were being represented in the group?
> How were emotions handled? (Stevens, 1996, p. 172)

These questions, as well as Krueger's analytical principles, have been used as a supplement to the overarching reflexive approach. As regards thematic analysis, the structure of the focus group interviews clarified in 4.4.3 and in the interview guide, proved to be so clear within the interviews that it constituted a thematic framework applying to all the three cases. The framework from the interview guide comprised: (i) experiences with the video camera, (ii) reflections about the video excerpts from the ensemble rehearsals, (iii) aural awareness—what

is it, and (iv) aural awareness in ensemble rehearsals, individual practicing, musical intuition, and the utility value of aural awareness. The focus group statements from the participants belonging to these themes have been used in different ways. Some statements have been useful in order to make the study trustworthy, in particular the participants' comments on the first theme: experiences with the video camera. Other statements, such as those from the second and third themes, have underlined analyses from the video observations. Still other statements, in particular those from the fourth theme, have contributed to the overall understanding and discussion of the research topic in the present study.

4.6 Ethical considerations

> Ethics refers to how values and moral principles are integrated in the actions and reflections of research (Stige, Malterud, & Midtgarden, 2009, p. 1511).

The relationship between the participants and the researcher is based on trust: the participants must rely on the researcher to be professional, and the researcher must rely on the participants to be truthful. A researcher's professionalism in this context is about making sure that every participant is treated with respect, that privacy is protected, and that the data is treated confidentially.

4.6.1 The power of being the researcher

An important ethical consideration is to be truthful towards the empirical data, and to be aware of the relationship between those "who write" and those "who tell" (Stige et al., 2009, p. 1512). There is quite a lot of power in being the person who does the analysis, chooses the quotations, and writes the thesis. The researcher is the one who, through theoretical perspectives, seeks to analyze the data in order to answer the problems and research questions defined. Hence, the analysis and its presentation will always be constructed by this particular researcher: "When knowledge is being constructed, no two observers construct it exactly the same way" (Stake, 2006, p. 37).

As the researcher in the present study, I am aware that I am constructing knowledge on the basis of *my* preconceptions and by looking at the data provided in *this* particular study. The aim, then, is to be as honest with my readers as

possible, reporting my data as honestly as I can and stating my findings clearly, being careful to clarify how I reached my conclusions. The researcher has a great responsibility when it comes to *presenting* the thesis in a trustworthy way. Stake (2006) says:

> It may seem implausible, but the author has partial responsibility for the validity of the reader's interpretations. […] The author needs to repeat key assertions in several ways. He or she needs to give illustrations. He or she will leave some of the work for the readers to do, but should give them the makings of understanding (Stake, 2006, p. 35).

This is in line with the reflexive aim of a transparent presentation, to which I will return shortly.

4.6.2 NSD, information and consent

The present study was reported to the Data Protection Official for Research (Personvernombudet) at the Norwegian Social Science Data Services (NSD) and was approved in November 2010 (appendix 5). All the participants in the trial observation received information about the purpose of the observation, and they signed a declaration of consent (appendix 6). Within the main study, information about the project was sent to the participants by e-mail in advance of the first ensemble rehearsal I was going to attend. All the participants then signed declarations of consent, and they also received a promise of confidentiality from me (appendix 7). The teachers received the same information as the students and they signed a consent and promise of confidentiality. As regards confidentiality, only my supervisor(s) and I have had access to the information that is individually identifying, and we are both bound to confidentiality.

4.7 Trustworthiness and transferability

In every study there are questions of trustworthiness. Regarding observational methods, one might ask how we make sure the participants do not behave differently than they would have in the researcher's absence. Fangen (2010a) claims that it might be stressful to be exposed to a researcher noting everything you do. An advantage of ensemble rehearsals is that they have an established structure, and the students know each other. Still, I have considered it important to uncover any discomfort within the ensembles regarding my role as an observer. In all the focus group interviews, I have therefore opened up for

elaboration on this issue and all the groups claimed they had been comfortable with my presence. By doing focus group interviews after observations, the participants got a chance to express their opinions on both the topic of the study *and* the research situation itself. Such interviews also prevent the participants from becoming merely research objects, an important ethical consideration within observational studies (Fangen, 2010b). My experience has been that having focus group interviews follow video observations have made the study more trustworthy.

4.7.1 Trustworthiness

Research methodology often uses the terms validity and reliability, referring respectively to "whether a method investigates what it purports to investigate" and "whether a finding is reproducible at other times and by other researchers" (Kvale & Brinkmann, 2009, pp. 245-246). This way of understanding reliability may be seen to be contradictory to the methods and aims of qualitative research. Certainly, it is more difficult to demand qualitative research to be reproducible, when the aim is an in-depth understanding of a specific phenomenon in its natural setting, provided by a researcher who uses herself as a subject to produce qualitative data.

Lincoln and Guba (1985) suggest "trustworthiness" as an alternative to validity and reliability. They claim that the basic issue in relation to trustworthiness is about persuading the audience (including oneself) that the findings of an inquiry are worthy of attention (p. 290). The researcher can increase the credibility of an inquiry in several ways. From among Lincoln and Guba's suggestions, I have used prolonged engagement, triangulation, peer debriefing, and member checks.

Prolonged engagement is about investing sufficient time to learn the "culture," test for misinformation, and build trust (Lincoln & Guba, 1985, p. 301). In the present study, I have invested about six months on each case, following the participants through three ensemble rehearsals and a focus group interview. I have also attended chamber music lessons in order to learn more about the chamber music culture at NAM. In my experience, I have been able to build a lot of trust. All the ensembles claim that they have been comfortable with my presence at the rehearsals and that they trust me to use the information carefully. Moreover, the focus group interviews have been important in testing for misinformation,

both in terms of how I have interpreted the rehearsals and in terms of the research situation to which they have been exposed.

Triangulation seeks to approach the research question from different angles. In the current study, this has been done by using different data sources, as described in 4.2. My experience is that the analysis in the present study would have been insufficient without several data collection methods.

Peer debriefing is a discussion with peers where the aim is to allow the researcher to describe the first thoughts about, for instance, an interview. The peer should be "someone who knows a great deal about both the substantive area of the inquiry and the methodological issues" (Lincoln & Guba, 1985, p. 309). In this study I have used a colleague for peer debriefing after the focus group interviews.

Member checks is about letting the participants have a say about how they are presented in the thesis. In this study I have sent each participant the transcriptions of the interviews and invited them to comment.

One could probably have done even more to make the study trustworthy. However, "naturalistic inquiry operates as an *open* system; no amount of member checking, triangulation […] or whatever can ever compel; it can at best *persuade*" (Lincoln & Guba, 1985, p. 329, italics in original).

4.7.2 Transferability

Within qualitative research one finds little talk about generalization of the findings, and the present case study does not intend to conclude how music students in general are aurally aware in ensemble rehearsals. The study is conducted to gain a more complete and in-depth understanding of how these three ensembles is aurally aware in *their* ensemble rehearsals: "the power of case study is its attention to the local situation, not in how it represents other cases in general" (Stake, 2006, p. 8).

Guba and Lincoln (1989) suggest that rather than generalization, one talks about *transferability*, which may be thought of "as parallel to external validity or generalizability" (p. 241). This means that it is the receiver (not the sender or researcher) who decides whether the results can be applied to the next situation. What may be transferred, though, are the larger theoretical concepts (Krueger, 1998b). For example, in chapter 10 I discuss how the theoretical framework of this thesis, which provides the grounds for discussing aural awareness

in a collective learning situation such as ensemble rehearsals, might be further developed.

4.8 Presentation of the findings

Presenting the findings from a collective, instrumental case study requires some consideration about how to attend to the characteristics of each case while presenting overarching findings. Transparency is the most important principle in this respect, and it should imbue the presentation of the findings in general. More specifically I have attended to the qualities of each case in "within-case displays" and the overarching findings in a "cross-case display" (Miles & Huberman, 1994).

4.8.1 Transparency

Transparency is an essential criterion for a study's trustworthiness, because it shows the researcher's honesty. This aim is in line with the overarching reflexive research approach of the study. However, applying a reflexive framework puts certain demands to how I discuss and present the findings of the research study. According to Alvesson and Sköldberg (2009) there are two ways of presenting reflexive research. One is to present findings as a synthesis and selection of the researcher's own reflexive thinking. Another is to give the various levels of interpretation and the researcher's reflection ample space and special sections in the text (p. 300). This implies that the reflections 'behind' the findings should come to the foreground as transparent descriptions in the final text. With this approach, the researcher's voice also becomes transparent, which offers an opportunity to explain the nuances that are often hidden in the interpretations of data. The authors recommend this approach, which is the one I have followed most closely in the present thesis. In particular, the within-case displays show careful descriptions and reconstructions which are meant to provide transparency.

4.8.2 Within-case displays

Within-case displays (Miles & Huberman, 1994) normally describe single cases. In the present thesis, Part II is a *series* of such within-case displays, presenting the ensembles, one by one in separate chapters. This way the characteristics of

each case can be addressed, and thorough analyses of each case can be made. The aim is to both describe and explain. According to Bernard (in Miles & Huberman, 1994, p. 90) a "description" is referred to as "making complicated things understandable by reducing them to their component parts." In the within-case displays, each ensemble rehearsal will be described thoroughly, and reduced with the help of reflexive "deconstruction," as described in 4.5.2. "Explanation" on the other hand, is described as "making complicated things understandable by showing how their component parts fit together according to some rules" (Miles & Huberman, 1994)—that is *theory*. In the within-case displays, such explanations will be helped by reflexive "reconstruction" as described in 4.5.2.

Within the analyses of the video observations, all the rehearsals were analyzed as a chronological series of "episodes." An "episode" refers to a unity limited by the specific musical excerpt in focus, as well as the beginning and end of the ensemble's Joint Problem Space. When doing the content analysis of each rehearsal the episodes thus became the framework for describing which musical elements the ensembles worked on. For example, if one of the ensembles worked on intonation of the same chord several times within one episode, this was counted only once as "intonation." This overview of all episodes is presented in chapters 5–7 at the beginning of each "Rehearsal" section. In further describing and explaining the data there would not be enough space, and it would not be helpful, to present all these episodes. Hence, in the remaining parts of the "Rehearsal" sections, only the "in-depth episodes" are included. The in-depth episodes are chosen because they provide information about the research questions, offering rich information about the ensembles' problem-solving processes, and what kinds of tools the ensembles share.

Miles and Huberman (1994) define "display" as "a visual format that presents information systematically, so the user can draw valid conclusions and take needed action" (p. 91). Each chapter in Part II starts with information about the ensemble and their repertory, so that the reader can get to know the case. Then, in-depth descriptions and explanations of the data are presented using each ensemble rehearsal as a starting point. These presentations of empirical data caused new linguistic challenges, since the original transcriptions of both rehearsal negotiations and statements from the focus group interviews were in Norwegian. I have been very careful, in translating this data into English, to maintain as closely as possible the participants' meanings and intentions. I acknowledge, however, that translations can never fully capture the nuances of

the original utterance, and I have paid the utmost attention to this challenge. In sum, the chapters in Part II have several functions. They explore the qualities of each case, including each rehearsal and each interview, they clarify early steps of the researcher's analytical processes through the deconstruction and reconstruction of the data, and they function as a foundation for the discussions and analyses in the cross-case display.

4.8.3 Cross-case display

The present research study is an instrumental case study, which means that the ensembles play a supportive role, facilitating my understanding of aural awareness in ensemble rehearsals. In addition to the analysis of each case I have therefore done a "cross-case analysis" the goal of which is to provide interpretation across the cases (Stake, 2006, p. 39). Stake emphasizes that the point is not to compare the cases, because comparison obscures the situationality and complex interaction of case knowledge. The aim should rather be to increase our understanding of each individual case, in order to get a better understanding of the thesis' subject: aural awareness in ensemble rehearsals. The cross-case analysis will therefore involve a thorough analysis of how the three cases provide insight into this.

"Cross-case displays" (Miles & Huberman, 1994) describe multiple cases and how they are intertwined: "At a deeper level, the aim is to see the processes and outcomes across many cases, to understand how they are qualified by local conditions, and thus to develop more sophisticated descriptions and more powerful explanations" (p. 172). In the present thesis the cross-case display is presented in chapters 8 and 9. This display has an explanatory character in which I use the findings from each case as a starting point for making thematic clusters across the cases.

4.9 Summary

The aim of this chapter has been to give a thorough description of the methodological considerations, choices, and approaches within this study. To summarize, the present qualitative research study is designed as a collective, instrumental case study with three participating ensembles: a string quartet, a clarinet trio, and a piano trio. Data has mainly been collected through video

observations of rehearsals and focus group interviews. The observations of chamber music lessons and the field notes are considered only as complementing data sources, because they turned out not to inform the research problem and research questions.

The comprehensive analytical approach is reflexive interpretation. In addition, the video observations have been analyzed through video analysis and content analysis and the focus group interviews have been analyzed using principles for group interview analysis. Finally, in this chapter, there has been a discussion of ethical considerations, trustworthiness, and transferability, and I have accounted for how the findings will be presented; as within-case displays and cross-case display. It is hoped that this chapter on methodology has provided the transparency that is needed to assess the trustworthiness of this research study.

PART II
WITHIN-CASE DISPLAYS

Introduction to Part II

Part II of the thesis consists of three chapters, each a within-case display that seeks to provide thorough analyses that are close to the empirical data of the string quartet, the clarinet trio, and the piano trio. This is done by describing and explaining the data from the video observations and the focus group interviews, using the sociocultural perspective established in chapter 3, and the analytical principles established in chapter 4.

Each case chapter starts with information about the ensemble and its repertory. The purpose of this information is to invite the reader into the empirical part of the research study. Because the ensembles are playing different music, which they chose themselves, I am including some background information about what they are rehearsing, giving the reader a contextual basis for the more detailed analyses of the short musical excerpts following later in the chapters.

The next sections in each chapter are organized around the ensembles' rehearsals, which are presented in chronological order. Each rehearsal is outlined as follows:

First, I seek to answer the first question from the observation guide: What kinds of musical problems do the students face and choose to work on? The information I get from this is not directly an answer to any of my research questions; the information is rather a *prerequisite* for answering the comprehensive problem and the research questions in the study. What kinds of musical problems the students choose to work on is closely connected to what their aural awareness is directed to, as discussed in 3.3.5. The concepts of "elements of music" (Vea, 1981) and "elements of musical expression"(Pratt, 1998) is therefore used as an analytical starting point, but other categories may also appear; by

referring to Vea and Pratt I have not provided an exhaustive overview of what aural awareness can be directed towards.

The two first components of a "Joint Problem Space" (Roschelle & Teasley, 1995) are central in this regard: "goals" and "descriptions of the current problem state". When I discuss the problems that the ensembles work on, I use the term "problem state" and when I discuss the purpose of the problem they are working on, I use the term "goal(s)." As discussed in 3.3.5 musical elements may have content-aspects as well as performance-aspects. When it comes to content-aspects, it is likely that the ensembles' negotiations concern playing the music "accurately," according to what it says in the score, and that the goal is to play more "together." In the following three chapters, I will label such goals as "simultaneity." As regards performing-aspects, it is likely that the ensembles' negotiations concern questions of interpretation: should the timbre of this chord be dark or light? Hence, in the upcoming chapters such goals are labeled "interpretation."

Second, in the analysis of each rehearsal, I make a selection of one or more in-depth episodes out of the total amount of episodes found in each rehearsal.[48] This selection has happened after the data collection phase was finished. These in-depth episodes—of which there are six in case A, seven in case B, and six in case C—are described and analyzed thoroughly. They are chosen because I assume they provide answers to the two research questions, which means they comprise rich information about how aural awareness is part of the ensembles' problem-solving processes, and what kinds of tools the ensembles share in order to improve their playing, and how.

The analysis of an in-depth episode includes: (i) a description of problem state and goals (Roschelle & Teasley, 1995), (ii) the musical excerpt the ensemble is working on (from the score of the composition), (iii) empirical excerpts and summaries of the rehearsal negotiations (data from the video observations), (iv) a description of how the ensemble constructs the Joint Problem Space (Roschelle & Teasley, 1995), (v) a reflexive "deconstruction" (Alvesson & Sköldberg, 2009) of the empirical excerpts, further discussing how the ensembles "build" the JPS (Roschelle & Teasley, 1995), and then a detailed analysis of how aural awareness is part of the problem-solving process, using my definition

48 An episode is defined as a unity limited by the specific musical excerpt in focus, as well as the beginning and end of a Joint Problem Space.

of aural awareness from chapter 3,[49] and finally (vi) a reflexive "reconstruction" (Alvesson & Sköldberg, 2009) of the empirical excerpts, discussing how the ensembles solve the problem by "accepting knowledge into the JPS" (Roschelle & Teasley, 1995), in which I will be using the concept of tools as described in chapter 3 for a detailed analysis of what kinds of tools the ensembles share in order to improve their playing. The concept of tools relies on my combined understanding of Vygotsky (1978, 1981) and Wertsch (1998, 2007).[50] The final part of the reflexive reconstruction may include excerpts from the focus group interviews, if such data can be used in order to triangulate the results.

During the reflexive deconstruction and reconstruction I will occasionally offer some comments as the reflexive researcher of this study, as recommended by Alvesson and Sköldberg (2009) and described in 4.8.1. With this approach, the researcher's voice sometimes becomes transparent, in order to explain nuances that may be hidden in the interpretations of data.

Furthermore, in each case chapter, the tools that were shared will be summarized and further interpreted as findings, and in a separate section I will address aspects from the focus group interview, focusing on the ensembles' comments on how they are aurally aware in early or late stages of a rehearsal process, as well as other comments related to the research topic.

Some reasoning in the upcoming Part II will only be preliminary and "local." This has to do with the characteristics of a collective and instrumental case study, which seeks to understand each case in-depth, but also to facilitate the understanding of a specific topic. A cross-case analysis of the three cases, as well as further theoretical "global" discussions of the findings is to be found in Part III.

49 The concept of aural awareness in ensemble rehearsal refers to the ensemble's attentiveness, the sharing of ideas from their mind's ear, and the utilization of available knowledge resources, in their process of assessing a musical performance and deciding how to play.

50 This means I understand that tools are tools when they are in use, that they do not have fixed meanings, that they may mediate the ensemble's understanding of the musical problem they have constructed, and that they may appear in the form of verbal communication as well as non-verbal gestures.

5 Case A: The string quartet

This chapter is a within-case display of "the string quartet." It describes and explains characteristics of this particular case, according to the theoretical and analytical principles summarized in the *Introduction to Part II*.

5.1 The ensemble and their repertory

The string quartet ensemble consisted of second-year performance students: a female violinist, a male violinist, a female violist, and a female cellist. They were meant to be a piano quintet, but unfortunately the pianist was forced to take a break from playing because of tendonitis, just as the video observations started. She decided to withdraw from the research project, but the rest of the group still wanted to participate as a "string quartet." I therefore never heard the group rehearse with the pianist, but since my selection criteria opened up for any combinations of strings, winds and piano, and because the case study is instrumental (Stake, 1994), this change was not a problem. In order to underline the instruments that were represented, I named case A "the string quartet."

When I observed this ensemble they rehearsed *Piano Quintet in G Minor*, op. 57, by Dmitri Shostakovich (1906–1975), in anticipation of the pianist's return, and *String Quartet No. 2 in A minor*, op. 13, by Felix Mendelssohn (1809–1847). I will briefly examine these compositions more closely, primarily to give the reader an introductory impression of the music the ensemble was rehearsing.

Shostakovich's Piano Quintet was composed in 1940, and the composition is in five movements. During the video observations the ensemble rehearsed the third and fifth movement (in italics below):

1 Prelude: Lento
2 Fugue: Adagio
3 *Scherzo: Allegretto (B major)*
4 Intermezzo: Lento
5 *Finale: Allegretto (G major)*

Keller (2011) describes the third movement *Scherzo* as having a "naive sassiness" and the fifth movement *Finale* as having "the optimism of the dance-march" (p. 430). Berger (2001) describe the *Scherzo* as "fiery and tempestuous" and points in particular at the beginning, which in Berger's terms is "an almost naïve two-phrase piano tune against an aggressive accompaniment in the strings" (p. 412). The *Finale* is described by Berger as "cheerful and optimistic", with a clean and simple structure, and a rhythm that "hovers between dance and march" (p. 412).

Mendelssohn's quartet was composed in 1827, when the composer was 18 years old. According to both Keller (2011) and Berger (2001), he fell in love during a visit to Berlin, and wrote a song about young love, "Frage" ("Questions"), based on a poem by his friend Johann Droyson. The three-syllable and three-note opening phrase from this song, "Ist es wahr?" ("Is it true?"), then served as the central musical theme in op. 13, which he composed shortly thereafter. "The phrase is first heard following the slow introduction, and returns often, with great rhetorical effect" (Keller, 2011, p. 294). The composition is in four movements. During the video observations the ensemble rehearsed the first movement (in italics below):

1 *Adagio—allegro vivace (A major)*
2 Adagio non lento
3 Intermezzo
4 Presto

The first movement starts with a slow *Adagio* introducing the three-note phrase "Ist es wahr?", then moving on to the *Allegro Vivace* starting with sixteenth-notes until the viola starts the principal theme. According to Berger (2001) the second theme is "intense" and "impassioned", while the development, which starts exactly like the *Allegro Vivace* section, is "highly contrapuntal, dissonant, and continually surging with musical electricity" (p. 263). Discussing the key of the work, Keller (2011) underlines that, although the work as a whole is in A minor, as the title indicates, the first movement is in A major, and the piece is often identified as being in that key (p. 294). According to Keller, it would therefore be more accurate to say that the piece is in A major/minor.

Table 3 shows an overview of the repertory and particular movements the ensemble played during the rehearsals I observed, and when the focus group interview took place.

Rehearsal 1 October	**Rehearsal 2** November	**Rehearsal 3** March	**Focus group interview** May
Third movement, Shostakovich.	Fifth movement, Shostakovich.	First movement, Mendelssohn.	

Table 3: Overview of observed rehearsals and the focus group interview, the string quartet.

5.2 First rehearsal

The repertory of the first rehearsal was the third movement of Shostakovich's Piano Quintet. I begin with a look at the kinds of musical problems the students faced and chose to work on.

The analysis of the first rehearsal shows that the ensemble primarily described problem states in relation to bowing (8), tempo (6), articulation (5), phrasing (5), intonation (4), and dynamics (4), but also in relation to entirety (2), balance (2), character (2), and rhythms (2). Vibrato, form, time, pulse, entrances, harmonics, and analysis were each addressed once. Furthermore, their goals seemed to be either (a) to improve their ensemble playing (simultaneity/coordination), or (b) to improve their ensemble playing, *and* to improve their understanding of the musical score or the composer's intentions (interpretation of notation/character). Altogether, 14 episodes had simultaneity as a goal, and seven episodes had a goal of both simultaneity and interpretation.

Among the episodes of the first rehearsal, I would like to examine one in depth, because it exemplifies a way the ensemble is aurally aware when working on intonation, and it also shows how one of the ensemble members thinks they could have solved the problem differently. This episode has been given a 'serial number' and a title, as shown in table 4.

	Title of the episode	Problem states and goal
Episode 1A	"Intonating a series of B major chords"	Intonation, balance *Simultaneity*

Table 4: Overview of in-depth episode, first rehearsal, the string quartet.

Episode 1A was one of the video excerpts the participants were shown before the focus group interview. It was not commented on specifically; however a general comment from the focus group interview about the issue is included in the analysis.

5.2.1 Episode 1A: Intonating a series of B major chords

In this episode, the ensemble works on the opening of the third movement of Shostakovich's Piano Quintet, and the problem state is described by the ensemble as the intonation of a series of B major chords. In relation to this, the ensemble also works on balance. The ensemble's goal is simultaneity; that is, the goal is to coordinate the intonation between the ensemble members. The pianist (who is not present) has the theme, while the strings have an accompanying role, as shown in figure 4.

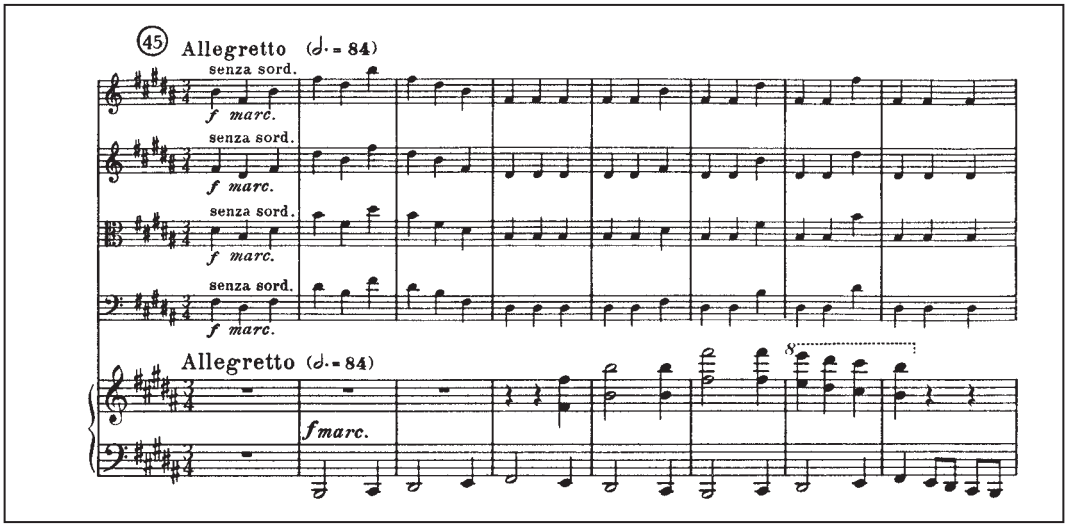

Figure 4: Measures 1–8 (Shostakovich, 1957, p. 22).

A Joint Problem Space is constructed around the problem of intonation in the first measures of the movement. Here are excerpts and summaries from the ensemble's negotiations:

Violinist 1: […] about the beginning […], the three first measures were very out of tune (*she laughs*). *The cellist nods.*

Violist: I know. Maybe we should just…

Violinist 1: Start from the beginning? […]

Cellist: Perhaps just tune the chords? Just play long notes. *The first violinist agrees*. […]

They start playing the first chord. The first violinist interrupts and asks whether the cellist and second violinist have the same note. They play alone, and it is the same note. The other two join in on this chord. They hold it for a while, and then change to the next note at the first violinist's instruction.

Violinist 1: Should we try again? I think the sixth note is the worst.

Cellist: But you (*directed to the first violinist*) play with open strings somewhere? *She says no*. It just looked like it […] because if you did, then we should tune after you. […]

Violist: Can you just play the sixth note without me? […]

The cellist and the second violinist start playing their common note (F-sharp), then the first violinist joins in (with her B), and then the violist plays her note (the D-sharp). […] Since the cellist says it's difficult to hear the second violinist, they discuss the balance.

Violinist 2: You (*directed to the first violinist*) have a B, right*? She agrees*. Because this is a B major chord.

Cellist: You (*directed to the first violinist*) have a B? And we, (*points at the second violinist with her bow*) have the fifth? We have F-sharp. And you (*directed to the violist*) have?

Before the violist is able to answer, the second violinist says she has the third. […]

Cellist: So you (*directed to the first violinist*) are in a way most important. […] So if you start, and we tune after you.

Violinist 2: It's a little difficult, because she has the highest note.

Violinist 1: Exactly!

Cellist: I know.

The second violinist suggests they take the fifth chord instead, because the keynote there is in the cello. Then the first violinist points out that the cellist and the second violinist seem to play in unison, and suggests they play this alone so the others can listen. The two of them play slowly, twice. […] Then the violist and the first violinist play once. As they finish, the second violinist suggests that they all play the fifth chord (second note in measure two) by building it from the keynote. They do this.

Reflexive deconstruction

The first violinist is the one who claims that the first measures are out of tune. In doing so, she begins to construct a Joint Problem Space, and this is co-constructed by the cellist (who nods right away) and the violist, who responds: "I know." Hence, according to the first part of the definition of aural awareness in ensemble rehearsals, which concerns attentiveness, it seems as if all three have been attentive to the ensemble's musical performance: their assessment of their performance is that the intonation of the opening measures need improvement. They are also attentive to each other; the ensemble's negotiations are collaborative, and they all make suggestions for improving the performance.

However, as regards the second part of the aural awareness definition, the ideas they explicitly share from their mind's ears are not many. According to my analysis, there are only two occurrences: in the beginning, when constructing the JPS, they share that they have perceived a mismatch between their performed intonation and an ideal one, and later, the first violinist evaluates their performance after playing long notes, saying: "I think the sixth note is the worst." That means, the ensemble as a whole is not explicitly assessing the outcome of their attempts to improve their playing. For example, when they have spent some time playing all the chords as long notes, as suggested by the cellist, they do not collectively evaluate it. Although the first violinist identifies the sixth note as

"the worst," she starts by asking whether they should just try again. Also, when they play in pairs, they make no suggestions of what to listen for, nor do they make explicit any evaluations of what they noticed as they were playing and listening. I believe, as the reflexive researcher, that a low degree of sharing of ideas from the mind's ear can make it more difficult to maintain a JPS, but in this case the ensemble manages to maintain it.

The ensemble is utilizing a great deal of available knowledge resources, which constitutes the third part of the aural awareness definition. This happens even though they are not sharing much of what their mind's ears are telling them. For example, they seem to utilize theoretical knowledge when they are analyzing the B major chord and practical knowledge when they suggest playing long notes or start building the chord from the keynote, and the cellist may be utilizing acquaintance knowledge when she says that open strings means that everybody else has to adjust.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the first violinist identifies a musical problem, they all participate in solving it, and they seem to be aurally aware in terms of attentiveness and utilization of knowledge resources, but not in terms of sharing ideas from their mind's ears.

The knowledge resources that were accepted into the JPS, are interpreted as three, shared tools: (i) tuning the chords by playing long notes, (ii) analyzing the chord, and (iii) building the fifth instead of the sixth chord from the keynote.

The suggestion of tuning by playing long notes comes from the cellist. It is difficult to say how this tool is actually shared, since there is only one verbal evaluating comment: that the sixth note is "the worst." However, the musical communication while they are playing the long notes might indicate that each of the students makes intonation adjustments for each chord, and that they are aurally aware on an individual level. This means the meaning of this tool is limited to the negotiations each student has with him- or herself.

The idea of analyzing the chord by identifying who is playing the keynote, the fifth and the third, originally comes from the second violinist, who points out that it is a B major chord they are playing. The cellist follows up by going through the whole ensemble and making it explicit which role each ensemble member has within the chord. Then, the violinists consider the sixth note to be

difficult to tune by, because the keynote in the first violin is in such a high range. They finally tune the fifth chord instead. This way, the tool of analyzing the chord directly affects the next tool, which is to build the chord from the keynote. It seems as if the ensemble needs the analysis of their roles in the chord in order to build the chord the way they want to.

Episode 1A was not discussed specifically in the focus group interview, although it was included in the video excerpts. However, one of the violinists shares these general thoughts about the video excerpts that are related to intonation:

> First violinist: I think by playing slower, and again and again, we make each other listen, but we do not really find the chords, because we (*sings and shows how they slide on the fingerboard*), and it is not a clear note. So, I think that is why maybe it is not useful, after all. Sometimes, when we are playing it does not really work with intonation. But we are trying to set the tempo down, to just hear each other and trying to tune, but now I see that sometimes that does not work (Interview A, p. 3).

The violinist points out that they often rehearse intonation by playing slower, several times, and that this makes them listen to each other. However, her evaluation is that this approach is "not useful, after all," because they do not have strategies for "finding the chords," as she says. From my point of view as a reflexive researcher of the study it seems that they do not know exactly what to do when they are playing these long notes and listening to each other: how to adjust, when to adjust, what to listen for.

5.3 Second rehearsal

The repertory of the second rehearsal was the fifth movement of Shostakovich's Piano Quintet. I start with a brief overview of the kinds of musical problems the students faced and chose to work on.

The analysis of the second rehearsal show that the ensemble primarily described problem states in relation to rhythms (6), intonation (6), entrances (5), tempo (5), dynamics (5), and character (4), but also in relation to balance (3), bowing (3), and pulse (2). Timbre, time, phrasing, articulation, melody,

leadership, and harmonics were each addressed once. Furthermore, their goals seemed to be either simultaneity, or a combination of simultaneity and interpretation. Altogether, 11 episodes had simultaneity as a goal, and seven episodes had a goal of both simultaneity and interpretation.

Among the episodes of the second rehearsal, I will describe three in depth, because they exemplify that the ensemble's ways of being aurally aware, and the kinds of tools they share, might lead to quite different outcomes of their problem-solving. These episodes have each been given a 'serial number' and a title, as shown in table 5.

	Title of the episode	**Problem states and goals**
Episode 2A	"Intonation of parallel chromatic lines"	Intonation, balance, dynamics, timbre *Simultaneity*
Episode 2B	"Both accent and energy!"	Rhythm, phrasing, tempo, character, articulation, dynamics, balance *Simultaneity and interpretation*
Episode 2C	"Tuning a melodic rise"	Melody, intonation *Simultaneity*

Table 5: Overview of in-depth episodes, second rehearsal, the string quartet.

Episode 2C was one of the video excerpts the participants saw before the focus group interview. However, the ensemble did not comment on it, and thus the analysis of all three episodes is based on the video observations only.

5.3.1 Episode 2A: Intonation of parallel chromatic lines

In this episode, the ensemble works on parallel chromatic lines in the fifth movement of Shostakovich's Piano Quintet. The problem state they describe is the intonation of the chords that appear in parallel lines. In relation to this, the ensemble also works on problems with balance, dynamics, and timbre. The ensemble's goal is simultaneity; that is, the goal is to coordinate the intonation between the ensemble members. The first violinist has the theme from number 86, and the chromatic lines are in the three upper string parts, as shown in figure 5.

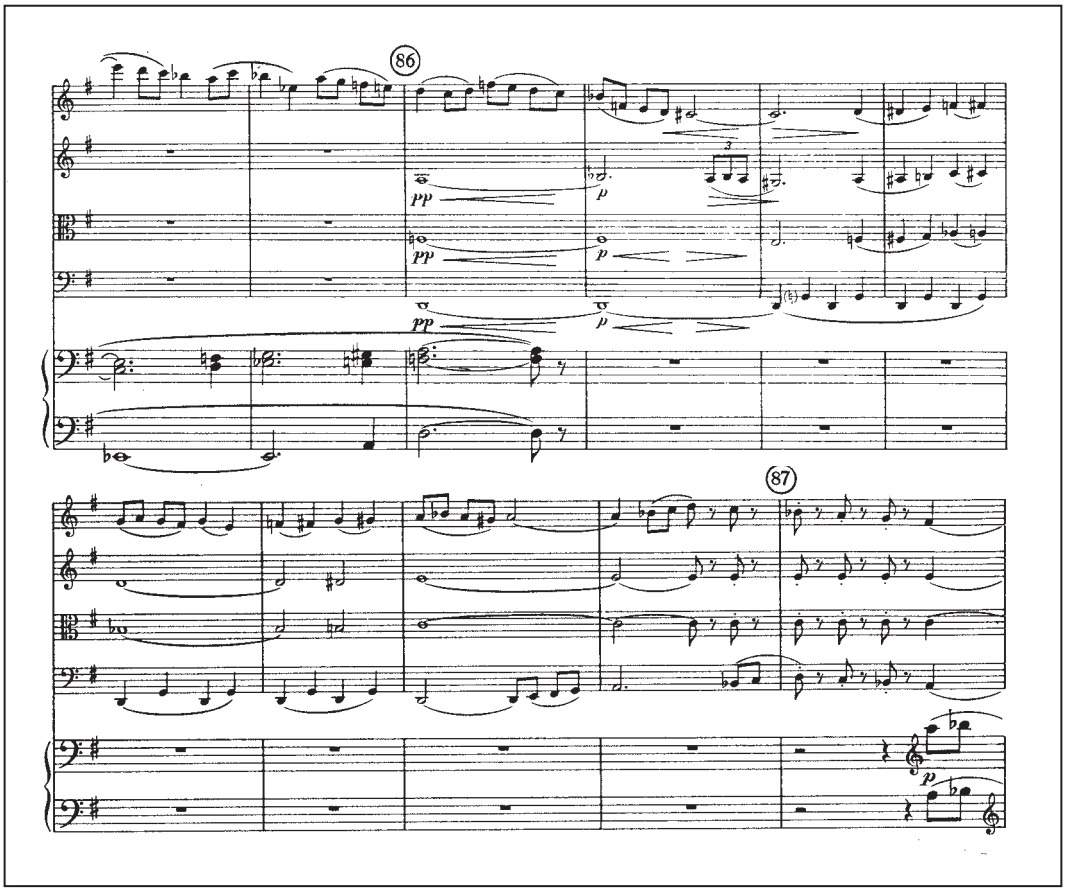

Figure 5: From two measures before number 86, and to 87 (Shostakovich, 1957, pp. 45-46).

A Joint Problem Space is constructed around problems with intonation, when they play the chromatic lines from the third measure of number 86. Here are excerpts and summaries from the ensemble's negotiations:

Violist: In the fourth bar, it was a little bit out of tune. *Everybody plays by themselves*.

Violinist 1: Can we play all together?

The cellist plays by herself, while the second violinist is checking the full score, which he keeps on the floor. […]They decide to begin in the third measure of 86, in the fourth beat.

Violinist 1: Do you (*directed to the cellist*) have a chromatic scale?

Cellist: No, I only have a G. *They decide to play without the cellist*. […]

Violist: What do you think? (*directed to the cellist*).

Cellist: I was thinking about the balance […] perhaps have the same dynamics. *The second violinist is looking in the score.* Or should everyone follow the first violinist, so that if she tunes the note a little bit too high, then you have to do the same?

Violist: That's the smartest thing to do.

Cellist: […] But maybe you (*directed to the first violinist*) should play a little louder.

They decide to play all together. As soon as the cellist starts playing, the others interrupt by saying "aha", "okay" when discovering the cellist does not only play a G.

Cellist: And then I start with D (*plays what she has and shows it to the violist who sings it*).

Violist: I thought you had a G all the time.

Violinist 1: Yeah, me too. *They decide to play it once more*.

Cellist: And perhaps think about the same sound. We have had quite different sound qualities. *They play again after some confusion about the rehearsing tempo.*

Violist: We should try to be even more together. *They play again. The violist thinks that no one should play before first violinist.*

Cellist: Also, when I play the G it is on an open string, so you have to listen to me as well, to tune by. They play again.

Violinist 1: The intonation, was it in tune?

Violinist 2: Now we are all making a *diminuendo* on each note (*sings to demonstrate*). *The others agree.*

Violist: Then one can't hear whether it is in tune or not.

Violinist 2: So I think we should play one more time and sustain the notes.

The others agree. They play again and then conclude that the intonation was much better now.

Reflexive deconstruction

The violist is the one who identifies there is a musical problem, by saying that "it was a little bit out of tune," and thus she begins the construction of a Joint Problem Space. The first violinist is co-constructing this JPS, by labeling what is going on in the fourth bar of 86, which are chromatic lines in the violinists' and the violist's part, and something else in the cellist's part. As regards the first part of the aural awareness definition, they are all attentive to their performance at this point, which they assess as out of tune. However, they are only partly attentive to the score, and the role of the cellist. This leads to a misunderstanding of what the cellist actually plays.

For a while, their problem-solving action is therefore to play without the cellist, but when they find out that the cellist is moving between a G and a D, they have to think of other problem-solving actions. Returning to the aural awareness definition, the cellist starts by sharing an idea from her mind's ear; that they should think about having the same sound qualities. After playing again, the violist shares what she hears: "We should try to be even more together." She adds that no one should play before the first violinist. Furthermore, the cellist informs the others that when she plays her G "it is on an open string, so you have to listen to me as well, to tune by." When the first violinist asks, after playing the measures again, whether the intonation was good, the second violinist says something for the first time in this problem-solving process, sharing this idea from his mind's ear: "Now we are all making a *diminuendo* on each note." This is noticed by the violist who underlines his point by saying one cannot hear whether something is in tune when they are making *diminuendo*, and the first violinist, who suggests that they play again and then sustain the notes.

The ensemble may be utilizing different knowledge resources, but none of them are very explicit. However, the ensemble's attentiveness is very explicit in this episode.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the ensemble constructs and maintains a Joint Problem Space, and they seem to be aurally aware when it comes to their continuous assessment of their performance, in particular when they share ideas from their mind's ears, and when they utilize different knowledge resources in their efforts to solve the problem.

However, none of the knowledge resources seems to be accepted into the JPS, and hence my interpretation is that no tools were shared. The data only reveal that the ensemble was more satisfied with the intonation in the end.

5.3.2 Episode 2B: Both accent and energy!

In this episode, the ensemble works on a series of 17 measures in the fifth movement of Shostakovich's Piano Quintet, all measures having the same rhythmic structure in the string parts: a dotted half note with an accent and a staccato quarter note, connected by a slur. The ensemble's defined problem state is the energetics as well as the articulation of the two notes in each measure. In relation to this, the ensemble also works on problems with phrasing, tempo, character, dynamics, and balance. Their goal is both simultaneity and interpretation of these measures. Starting in number 90, the first four out of the 17 measures are exemplified in figure 6.

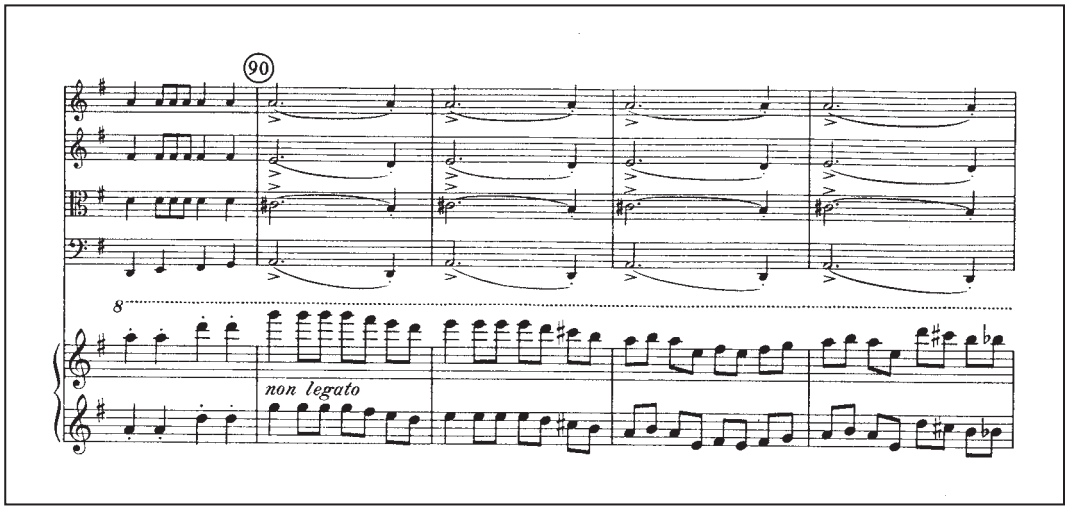

Figure 6: Number 90, four measures (Shostakovich, 1957, p. 48).

A Joint Problem Space is constructed around problems with the length of the first note in each measure, and articulation of both the dotted half note and the staccato quarter note in each measure. Here are excerpts and summaries from the ensemble's negotiations:

Violinist 2:	From 90 I feel that we don't have the same length in the first note. It should be more together. I don't know how long we should hold the dotted half-note […]
Cellist:	I think the upbeat is at least as important as the first note.
Violinist 2:	Yeah, but it has an accent.
Cellist:	Yeah, I know, but if we don't have a good upbeat, then the next note won't be good. *The second violinist plays a little.* So, just not lose the tempo, then.
Violinist 2:	I guess we should have a little gap between the dotted note and the upbeat. *The others agree*.
Violist:	And just keep up the energy. So that we don't fall asleep because we have the same.
Violinist 2:	Just try to listen so that we get the same length, and that the upbeat is together.
Cellist:	Okay, so we make a little gap between the dotted note and the quarter-note?
Violinist 2:	Yeah, just a little, I think.
Cellist:	Let's work on that.
Violinist 1:	You mean in between the measures? *The cellist explains and plays how the suggested gap could sound.*
Violinist 1:	But why? Isn't it better if you have a gap before (*she plays a longer gap on the measure lines*).
Violist:	But it should be less, I think. […] Now it's affecting the tempo. […] We have to be careful not to slow down.

The first violinist agrees, and also thinks that the tempo should be kept up. They decide to repeat the first measure and work it out.

Violinist 1: I think the first beat should be in tempo, and then we won't slow down.

Violist: But I think […] the second note should have more energy (*sings it*). *They play again and think it is better.*

Violinist 1: But the first note is accented […], so if we think too much about the quarter-note, then we might forget about the next note. *The others agree*.

Violist: Let's try to do both.

Violinist 1: Like both accentuated?

Violist: No, just the accent and the energy. *They play again.*

Violinist 1: I think it was good.

Then the second violinist suggests they play a little louder, because the pianist plays in the high register. They discuss string choices, and then they play a little faster.

Reflexive deconstruction

The second violinist is the one who identifies a musical problem, by saying that they do not agree on the length of the first note (the dotted half-note) which means they are not coordinated. With this comment he begins to construct a Joint Problem Space, which is immediately co-constructed and expanded by the cellist, who says: "I think the upbeat is at least as important as the first note."

The ensemble's attentiveness appears in different ways: the second violinist is attentive to the musical performance (coordination) and to the score (trying to interpret the composer's intentions with this notation), the cellist is most attentive to the others (commenting on what the others suggest), the violist is attentive to the problem-solving (trying to moderate the others' suggestions), while the first violinist is silent for a long time and is first explicitly attentive when she takes part in suggesting problem-solving actions (questioning what the others have decided).

In this episode, the ensemble is sharing different ideas from their mind's ears. The first comment from the second violinist is: "From 90 I feel that we don't

have the same length in the first note. It should be more together. I don't know how long we should hold the dotted half-note." In this statement he is sharing that, in his perception of the performance, they were not coordinated, and he points at the first note as a problem. He is also sharing that he has no specific idea about how long they should hold it. Then, the cellist shares that she believes the upbeat (the quarter-note) must sound good in order for the next note (the dotted half note) to sound good. Moving on, the violist shares that she thinks it is important to keep up the energy, because the same rhythm is repeated 17 times, and when the second violinist has been thinking for a minute he suggests that they have a little gap between the two notes. In order to share these ideas they have probably been imagining either the memory of their performance, or the ideal performance, for their mind's ears. Such kinds of imagination seem to be made throughout this episode, by all the ensemble members.

What characterizes the ensemble's utilization of knowledge resources in this episode is that they are at the same time aiming for simultaneity and interpretation; acquaintance knowledge and theoretical knowledge seem to be intertwined. For example, they are discussing the problem in professional terms such as accent and tempo, while the suggestions are based on their own opinions and interpretations of the music.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the second violinist identifies a problem and they all participate in solving it; the ensemble members seem to be aurally aware, because of their different kinds of attentiveness, their extensive sharing of ideas from their mind's ears, and their use of knowledge resources.

The tools in this episode are all introduced in the beginning of the negotiations; yet, the whole problem-solving process is needed in order for the ensemble to share them. What the tools have in common is that they are related to professional terms: upbeat, accent, gap, and energy, and hence they contribute in constructing a shared conceptual space, which is important in Roschelle and Teasley's (1995) description of a Joint Problem Space. The terms upbeat and accent function as shared tools because they guide the students' listening attention to certain musical elements, while the terms gap and energy are shared tools because they guide the students' listening attention to possible interpretations of these elements.

5.3.3 Episode 2C: Tuning a melodic rise

In this episode, the ensemble works on a melodic rise in the fifth movement of Shostakovich's Piano Quintet, in which all the strings play in unison for 10 measures. The problem state defined by the ensemble is the intonation in this melodic rise, and their goal is simultaneity: coordinating their intonation. The melodic rise in its entirety is shown in the excerpt in figure 7, exemplified by the first violin part.

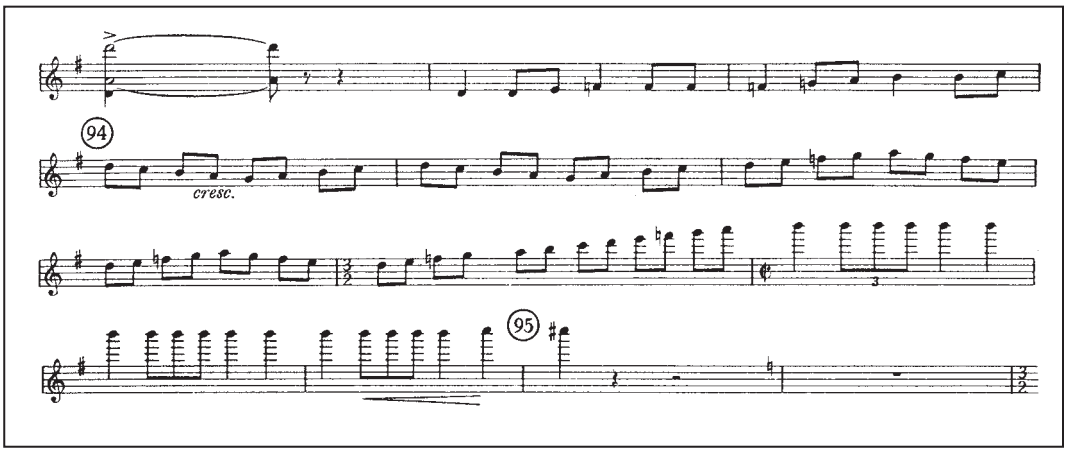

Figure 7: From three measures before 94 (Shostakovich, 1957, pp. 50-51).

A Joint Problem Space is constructed around problems with the melodic rise and the intonation. Here are excerpts and summaries from the ensemble's negotiations:

Violist:	Can we (*directed to the cellist)* take just the two of us? *The cellist agrees, and they play.* […] Maybe one more time.
Violinist 2:	It sounds like you easily get a little too high.
Violist:	Me?
Cellist:	Both of us, or?
Violinist 2:	Both, I think. […]
Violist:	You (*directed to the second violinist*) can just play an open D.

He does, and they play again two times. Then the two violinists play together, two times with no comments in between.

Cellist: Together? *The first violinist suggests they all take from two measures from before 94, to play it in context.* […]

Violinist 1: […] in 94, the C natural is very out of tune. *The others look in their parts*. And three measures later, the F natural is really out of tune *(she then explains by playing from 94, stopping on the notes she thinks is out of tune)*

The play again, a little slower, and stop to play some notes longer. Then they decide to play even more in context and in tempo, and start six measures before 94.

Violist: (Immediately) One more time!

Violinist 2: This top note is always very out of tune. […] Maybe we should try to stop on the top note? […] To see if we can land it there? *They do this.*

Reflexive deconstruction

The second violinist is the one who identifies a musical problem, by saying: "It sounds like you easily get a little too high," referring to both the violist and the cellist. They all then contribute in the construction of a Joint Problem Space, focusing on intonation. The first violinist maintains the JPS by being very specific about which notes she thinks is out of tune, and the second violinist further maintains it by pointing out the top note as "always very out of tune."

In this episode, all the ensemble members are very attentive to their own performance and their continuous efforts to improve their playing. They are also attentive to each others' suggestions, and immediately try them out. The sharing of ideas from their mind's ear appears when they point out something as out of tune. Because they do not share their assessment from their mind's ears of what they play, it is difficult to know whether they are satisfied with their progress. Practical knowledge is particularly salient in this episode, in terms of their aural perception skills on the one hand, and their suggestions of how to improve the performance on the other.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, they all agree on intonation as a problem state, the second violinist starts constructing a JPS by commenting on the violist and the cellist's performance, and both the first and second violinist contribute to maintaining and expanding the JPS later in the problem-solving process. The ensemble seems to be aurally aware, in their attentiveness to the musical performance and each others' problem-solving actions, because they are sharing ideas from their mind's ears when they assess the performance and when they draw on different kinds of practical knowledge (perceiving pitches and suggesting practical solutions).

Two tools are shared in this episode. The first tool is suggested by the violist right after the second violinist has argued that both the violist and the cellist "easily get a little too high." As a response to this, the violist says: "You (*directed to the second violinist*) can just play an open D." They then try this out: the second violinist plays an open D while the violist and cellist play their parts. What happens is that they create a point of reference, which is the keynote. When this note is used by the violist and cellist to compare the interval distance, it functions as a tool because it is easier to tune *in relation* to another note. The second tool is to stop and listen to the tones that are not in tune, and also to play these longer, as the ensemble did in episode 1A. In episode 2C they do this two times, first when trying to improve the intonation of the two tones that the first violinist has identified as out of tune (the C and the F), and second when trying to improve the top note that the second violinist has identified as out of tune.

5.4 Third rehearsal

The repertory of the third rehearsal was the first movement of Mendelssohn's String Quartet.[51] The second violinist had to leave after about 30 minutes, but the others carried on.

The analysis of the third rehearsal shows that the ensemble primarily described problems in relation to tempo (5), intonation (5), and dynamics (4), but also in relation to phrasing (3), balance (3), and articulation (2). Vibrato, melody, rhythm, energetics, pulse, accuracy, and melody were each addressed once.

51 When they play Mendelssohn the violinists switch parts.

Furthermore, their goals seemed to be either simultaneity, or a combination of simultaneity and interpretation. Altogether, four episodes had simultaneity as a goal, and five episodes had a goal of both simultaneity and interpretation.

Among the episodes of the third rehearsal, I will describe two in depth, because one exemplifies how the ensemble has trouble of constructing a Joint Problem Space, and the other shows a great variety of shared tools. These episodes have each been given a 'serial number' and a title, as shown in table 6.

	Title of the episode	**Problem states and goals**
Episode 3A	"Who is out of tune?"	Intonation, balance *Simultaneity*
Episode 3B	"Exploring aspects of a rhythmic passage"	Rhythm, energetics, pulse, articulation, phrasing, dynamics, accuracy, intonation *Simultaneity and interpretation*

Table 6: Overview of in-depth episodes, third rehearsal, the string quartet.

Episode 3B was included in the video excerpts seen by the participants before the focus group interview. Hence, an excerpt from the interview is included in this analysis. The analysis of episode 3A is based on the video observations only.

5.4.1 Episode 3A: Who is out of tune?

In this episode, the ensemble works on a melodic line towards the end of the first movement of Mendelssohn's String Quartet. The first violinist and the violist play in unison, two octaves apart; the cellist plays something similar but different notes, while the second violinist has something else. The problem state defined by the ensemble is intonation. In relation to this, the ensemble also works on balance. Their goal is simultaneity; that is, the goal is to coordinate the intonation between the ensemble members from the third of the measures and ahead shown in figure 8.

A Joint Problem Space is defined by the ensemble as problems with the intonation. Here are excerpts and summaries from the ensemble's negotiations:

Cellist: We are not in tune in the first note either.

Violist: I have open string, so … *They play.*

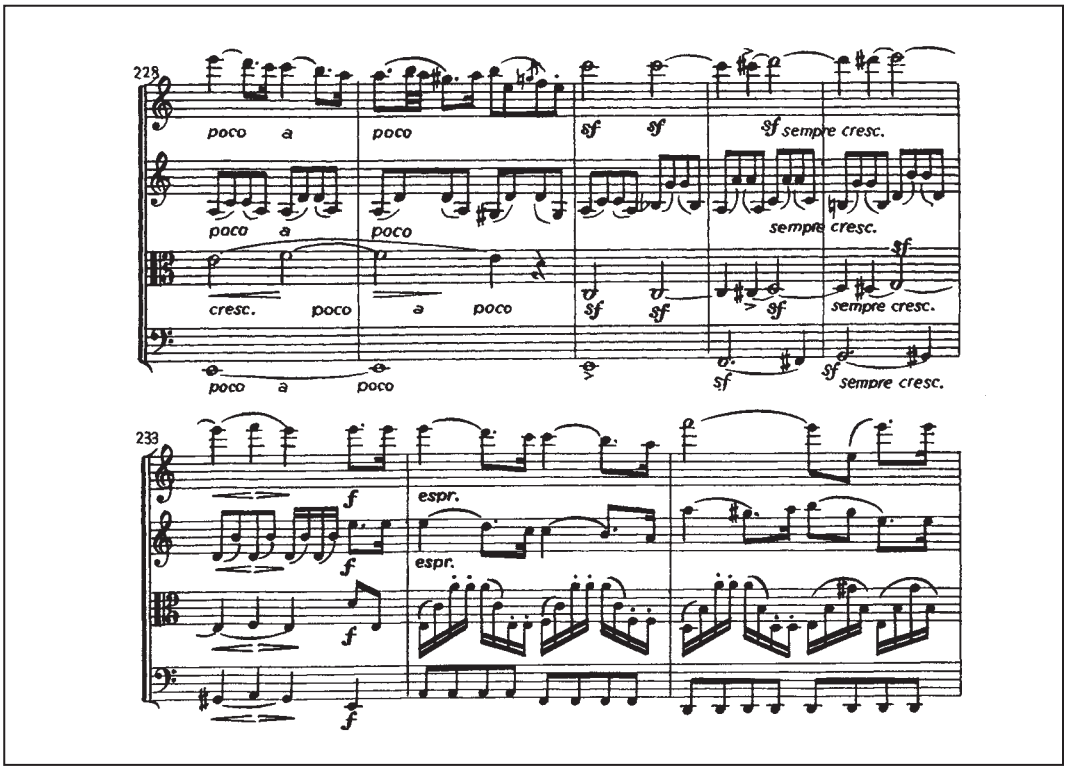

Figure 8: Measures 228–233, first movement (Mendelssohn, n.d., pp. 14-15).

Violinist 2:	You (*directed to the cellist*) have to listen to her (*points to the violist*).
Cellist:	Can't hear her … *They play again.*
Violinist 2:	(*directed to the first violinist*) I think a bit down actually. *The first violinist plays the first note while the violist also plays her note, which is the same.*
Violinist 1:	It's difficult to hear, because it's two octaves […] between. *The three of them all play the first note again.* But I also think the violist should play louder […] *They play again.*
Violist:	233 is not quite ….
Violinist 1:	Let's take the second note in measure 233. *He and the violist play this note, and the cellist joins in.*

Cellist: If we are going to play like that […] I would have to move my fingering quite a lot. […] *She plays the two alternative pitches to demonstrate.* And this is very low for me.

Violist: Then we are probably the ones playing out of tune. *Laughter*. Play an open string instead, then.

Cellist: That's not possible! (*She plays to demonstrate*)

The first violinist and violist suggest she plays with an open string just for now. Then, the first violinist suggests that they tune. They play an A, and each of them tunes their instrument. They decide to tune the 233-measure once more, and hold the notes. Then they play from 230 again. The first violinist suggests they play in tempo, and focus on the balance. However, the cellist says this is a problem if they are still going to rehearse the intonation, because they have decided where each of them should play louder in order to be an intonation reference point. They try anyway.

Violinist 2: It was much better. One more time! *They try it in context.*

Reflexive deconstruction

In this episode the ensemble keeps trying to construct a Joint Problem Space. The cellist starts constructing a JPS, by saying "we are not in tune in the first note either." The violist and the second violinist expand this problem space: the violist by saying that she has "open string", and the second violinist (who is not playing) by adding that the cellist (therefore) has to listen to the violist. At this point it seems as if the cellist is the one who is out of tune and needs to adjust. Moving on, the second violinist is further expanding the JPS by saying to the first violinist that he should play "a bit down, actually," which means she argues that he is also out of tune and has to adjust. Furthermore, before they evaluate the outcome of the adjusted intonation in measures 230–232, the violist starts constructing another JPS: that measure 233 "is not quite…." Then, while rehearsing this measure, the cellist expands this JPS by saying: "If we are going to play like that […] I would have to move my fingering quite a lot." This concern has to do with their basic tuning. According to the cellist, they are playing in a very high pitch, and what she is implying is that tuning this specific chord this low

would have a technical impact when she is going to play in context. The violist's immediate response to this is that it must then be she and the first violinist who are "playing out of tune."

At this point, they have constructed two Joint Problem Spaces, first in measure 230 and second in 233. However, neither of these solved the problems, because either the ensemble members created additional problems to the already existing problem, or they did not fully accept the constructions being made.

Still, one may say that the ensemble is attentive in different ways. They are all attentive to the musical performance and the musical score, though they sometimes seem more attentive to their own part, and the way it fits into the performance, than to the ensemble's performance as a whole. Furthermore, they are attentive to each other, partly by commenting on each other's performance, and partly by commenting on each other's attempts to solve the problem. What they are sharing from their mind's ears mainly has to do with assessing the intonation, based on their perception of what is performed. The first violinist also touches upon balance, but he does not share the ideas from his mind's ear explaining *what* about the balance he thinks should be improved. One explanation could be the next issue they are discussing, that they have randomly been playing louder in order to create intonation reference points. The most prominent knowledge resource they utilize seems to be the practical aural perception skills they use as they assess their performances.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the ensemble does not quite manage to construct a Joint Problem Space, and this makes the negotiations a bit incoherent. Yet, they are aurally aware by being attentive, by sharing ideas about who is out of tune from their mind's ears, and by drawing on aural perception skills in order to make these assessments.

The two first suggestions of problem-solving actions are made by the second violinist. When the violist has informed the others that she plays an open string, the second violinist says to the cellist that she has to adjust to the violist. However, it might seem as if this is rejected by the cellist, who says she cannot hear the violist. Shortly after, the second violinist suggests that the first violinist should play a bit down in pitch, but this is in turn rejected by the first violinist, who says it is difficult to hear when there are two octaves separating. A third example is the violist, who suggests that the cellist plays with an open string,

after the cellist has tried to explain that it would be difficult for her to tune the chord as low in pitch as suggested. This suggestion is thus also rejected by the recipient. None of these knowledge resources, then, were accepted into the JPS. Hence, they did not become shared tools. The only thing that can actually be regarded as a shared tool in the current episode is that they decide to tune their instruments, as a way of 'resetting' their intonation problems.

5.4.2 Episode 3B: Exploring aspects of a rhythmic passage

In this episode, the ensemble works on a rhythmic passage in measure 197 in the first movement of Mendelssohn's String Quartet, consisting of repeated sixteenth-notes in the violinists' parts and the violist's part, and a trill in the cellist's part.[52] The problem state defined by the ensemble is the rhythm and energetics of this specific measure. In relation to this, the ensemble also works on problems with pulse, articulation, phrasing, dynamics, accuracy, and intonation. Their goal is both simultaneity and interpretation—to achieve better musical fluency of the rhythmic passage shown in figure 9.

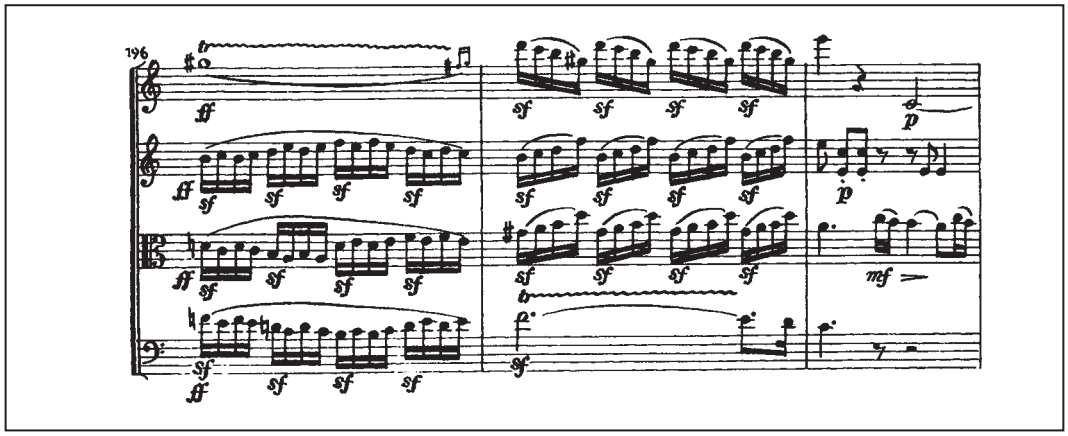

Figure 9: Measures 196–198, first movement (Mendelssohn, n.d., p. 12).

Two Joint Problem Spaces are constructed in this episode. The first concerns the ensemble's problems with the rhythm, energetics and musical fluency. The second concerns the intonation of the same rhythmic passage. I relate these

52 At this point, the second violinist has left the rehearsal.

here in chronological order. Here are excerpts and summaries from the ensemble's negotiations related to the first JPS:

Violist: We're never quite together there. […] I've got a feeling that you (*directed to the first violinist*) always want a slower tempo right there. […] *The first violinist has not thought about that. They decide to play only measure 197.* Can we just play (*plays only the first note in each sixteenth-note figure*). *They do this.* Can we articulate them the same way?

Cellist: Can I just see what you are playing (*looks at the violist's part*).

Violist: I and the first violinist play them a little sharp, those *sforzandos*, while you play them softer, a bit more *vibrato*.

Cellist: I've only got a trill.

Violist: Oh (*surprised*), you've only got a trill? *The cellist plays.* But have you got a *sforzando*?

Cellist: On that one, yes.

The violist asks whether she has a sforzando on every beat, and sings it. The cellist says she's only got one on her first beat, and plays it.

Violist: But that explains it. *Laughter.* […] But then, we're playing similarly, we who ought to play similarly *(directed to the first violinist). They play two more times.*

Violist: There shouldn't be even more *sforzandos*, then? *They try it.* And perhaps *crescendo* as well? […]*The first violinist agrees.*

Violinist 1: […] We do have *fortissimo* there *(plays measure 196).*

The first violinist is trying to explain how they can start fortissimo, then back off, and then play crescendo. The violist says she does not have a trill in measure 196 [as the first violinist does], but sixteenth-notes with sforzandos. The cellist explains that she has the same. Then the first

violinist once again tries to explain how he imagines this measure by playing.

Violist: So you drop the *sforzandos* a little on those two…? (*plays*) Was that what you had in mind? Just tell us, and we'll try it out.

The first violinist explains one more time. The violist thinks they should play the previous measure as well, to get it in context. They play from measure 196.

Violist: Perhaps still play with those *sforzandos*, so we don't commit a crime. *Laughter*.

Cellist: Can we try *fortissimo* all the way? Plus *sforzando*? *They play.*

Violist: We must be more accurate, because now there is a lot of noise. *They play the same again.*

Reflexive deconstruction of JPS 1

It is the violist who identifies there is a musical problem: "We're never quite together there." Hence, she starts constructing a JPS, by suggesting that they are somehow losing the tempo in measure 197. When the violist suggests problem-solving actions, the cellist interrupts by asking to see the violist's part. It turns out the cellist only has a trill, while the others have four sixteenth-note figures. This information seems to clarify their JPS, and they continue by suggesting problem-solving actions closely connected to how they want to interpret the score. The violist and the first violinist's attentiveness are in the beginning directed to their parts and their performance, while the cellist's attention is directed to how her part differs from the others'. When this is cleared up, they are all attentive to the interpretation of measure 197.

They all share ideas from their mind's ears. In the beginning, the violist argues: "I've got a feeling that you (*directed to the first violinist*) always want a slower tempo right there." This statement is most likely based on assessments she has made when listening to what the first violinist plays in relation to herself. Later, she says: "I and the first violinist play them a little sharp, those *sforzandos*, while you play them softer, a bit more *vibrato*." With this comment, the violist is sharing how she hears the performance, in order to contribute in the

problem-solving process. The first violinist also shares ideas from his mind's ear when he explains how he thinks the measure could be interpreted.

As regards knowledge resources, they are utilizing professional concepts such as *sforzando* and *crescendo*, which can be seen as theoretical, but not least, they are utilizing acquaintance knowledge when they offer views on how to interpret the score and the music.

Reflexive reconstruction of JPS 1

As the reflexive deconstruction of JPS 1 in this episode shows, the violist first identifies a problem, and a confusion about what the cellist plays contributes to making the JPS even more clear. The ensemble seems to be aurally aware, in terms of attentiveness, sharing of ideas from their mind's ears, and the utilization of knowledge resources.

Three tools are shared in this episode: (i) the violist's suggestion of only playing the first note in the sixteenth-note figure, (ii) the cellist's request to look in the violist's part, and (iii) the different interpretative suggestions.

The violist's suggestion of playing only the first note seems to function as a shared tool because it removes possible technical challenges, and it makes it easier to find a common pulse. The cellist's request to look at the violist's part is a shared tool because it contributes to clearing up a misunderstanding. The different interpretative suggestions serve as shared tools in many ways: they make the negotiations develop so that each ensemble member gets new ideas, they increase the ensemble's understanding of the score and the music, and they implicitly show how interpretation and simultaneity are dependent upon one another. This way, the interpretative suggestions support the ensemble's performance.

JPS 2

As explained above, the second JPS concerns the intonation of the same rhythmic passage. The following negotiations and summaries are a *direct* continuation of the negotiations above:

Violist: Are the first violinist and I together in this place?

Cellist: Can I listen to you once? *The two of them play.* You were definitely not in tune. […]*They practice a little by themselves.*

Violinist 1: Do we (*directed to the violist*) play the same? *They play slowly.*

Violist: (*Directed to the first violinist*) don't make vibrato. That's cheating!

They play slowly again. *The cellist comments on the intonation. They play a little to themselves, and the first violinist says that this place is tough. The violist agrees.*

Violist: Perhaps that is why we should just play *forte* all the way? […] like a huge tension-thing. […]*The others agree. The first violinist and the violist play once more.*

Cellist: It's not quite […] *The violist agrees. They play once more.* It's difficult to hear. That tritone you've got (*directed to the first violinist*) and the one you've got (*directed to the violist*), to get that in tune […]

They play once again, even slower. The cellist says it is better, but still thinks that the last note is out of tune. She suggests that the violist is a little high in pitch, while the violinist is a little low. They play again.

Cellist: Which note do you play *(directed to the first violinist)?* […]

Violinist 1: G-sharp (*plays*)

Cellist: *Plays a little*. Do it again!

Violinist 1: Perhaps you (*directed to the cellist*) should join in?

Cellist: I'll just check on the G-sharp, if it's okay (*laughter*).

They play. The cellist plinks a G-sharp towards the end of the measure. She concludes that the violinist's G-sharp is a little low. They both play G-sharp and compare. Then, they all play, twice. Still not satisfied. The first violinist thinks it gets better after a while, that the fourth figure is better than the first one. The violist suggests they stop after the first figure. They play like this. The violist suggests they do the same, but

now stop on the last note and hold this. They do this a couple of times. The cellist says she trills from an F to a G, and that this perhaps contributes to the confusion, when the first violinist is playing G-sharp. The first violinist also says it is technically difficult to hit the note, that they now know what the problem is in this measure, and suggest they practice it separately.

Reflexive deconstruction of JPS 2

The violist starts by asking whether she and the first violinist are "together in this place." This question is directed to the cellist, asking for her opinion. However, as they play again, the cellist's comment is that they are not in tune. With this statement she starts to construct a second Joint Problem Space in episode 3B, which she also contributes to maintaining by commenting on the others' play, and by asking questions: "Which note do you play *(directed to the first violinist)*?" The violist and first violinist are primarily attentive to what they are playing, while the cellist is attentive in the evaluative peer role. This is perhaps also the reason why the cellist is the one sharing the most ideas from her mind's ear, as she is commenting on the intonation, giving her opinions: "*She suggests that the violist is a little high in pitch, while the violinist is a little low*." The knowledge resources utilized also center on the cellist: she uses practical aural skills when assessing the others' playing and she uses the theoretical concept *tritone*.

Reflexive reconstruction of JPS 2

As the reflexive deconstruction of JPS 2 in this episode shows, the cellist identifies the following musical problem: that the violist and first violinist do not play in tune. Hence, the cellist is the one taking the initiative of constructing a JPS, and she is also active in maintaining it, by continuing to comment and ask questions as an evaluative peer. Furthermore, in the collaborative efforts to improve the performance she shows that she is aurally aware, by being attentive and sharing ideas from her mind's ear, and by utilizing different knowledge resources. The violist and first violinist are attentive to their own performance, but they do not share many ideas from their mind's ears, nor do they utilize specific knowledge resources. They do, however, contribute to the problem-solving process.

Several tools are shared through the negotiations in this episode: (i) comparing G-sharps, (ii) listening to the music's past, and (iii) stopping and listening while playing. The first tool is shared when the cellist asks which note the first violinist plays, and she says: "I'll just check on the G-sharp, if it's okay." What she does when the violist and first violinist play again is to plink her strings (a G-sharp) in order to compare her pitch with the first violinist's pitch. This comparison makes her conclude that he is a little low. The second tool is shared when the first violinist listens to the music's past (what they have just played) and argues "*that the fourth figure is better than the first one*." This functions as a tool because the third tool seems to be a direct consequence of it. Because the ensemble's attention is directed to the qualitative difference of their performances of the sixteenth-note figures, the violist gets the idea that they stop after the first figure, and then that they stop and hold the last note (the G-sharp and D) and listen while playing. In this episode, the cellist is very active as an evaluative peer, mediating the others' attempts to improve their performance.

The comparison of the G-sharps is commented on in the focus group interview, by the cellist. She says:

> Cellist: In the end I think it helped a little when I started playing that G-sharp we checked out […] (*the first violinist nods*). It improved quite a lot, after this rehearsal. So then I kind of felt that, yes, we were aurally aware in a good way. Although it took a while before we came up with this solution… (Interview A, p. 2, my translation).

The cellist underlines that the comparison of G-sharps was an important tool in this problem-solving process. However, she also points out another aspect: that it "took a while before they came up with this solution." Together with the similar comment from the violinist in episode 1A, this is an expression of self-evaluation, specifically related to the ensemble's way of solving intonation problems. The cellist finds support for this view with her ensemble colleagues. The violist also emphasizes that it takes such a long time before they even find out what they need to work on: "perhaps it would have been a good idea to have one strategy that we knew was working, in order to tune well" (p. 4). As a solution to this, the first violinist suggests they could improve how they localize what the problem actually is, and then ask themselves exactly what they need to do in order to solve that problem: "Often we just play slower without vibrato and think it's going to be OK, but very often [the problem] is very concrete"

(p. 4). The cellist finally concludes "we should be smarter when we practice … use some strategies" (p. 5). My overall impression, as the reflexive researcher, concurs with these views: that the string quartet is very concerned about intonation, but not fully satisfied with how they handle it in their problem-solving processes.

5.5 Shared tools

In the second research question of this project, I ask what kinds of tools are shared in order to improve the ensembles' playing, and how. The analyses of the in-depth episodes above show that different kinds of tools were shared during the string quartet's rehearsals. I will now summarize and categorize these tools as findings, and also extract how these contributed to the ensemble's collaborative efforts to improve their playing. It is important to note that in order to be a shared tool as described in chapter 3, one or more knowledge resource must be *in use* within the ensemble, and be accepted. This means that knowledge resources that are accepted into a Joint Problem Space can become shared tools, and that other knowledge resources remain available in the collective reservoir. The question is therefore *what kinds* of tools were shared, and *how* they were shared.

In episode 1A (Intonating a series of B major chords) three tools were shared: (i) playing long notes, (ii) analyzing the B major chord, and (iii) building the chord from the keynote. The first one, playing long notes, appeared as a *strategic tool*. By making each note into a *fermata* the ensemble had time to listen more carefully to the intonation, and to adjust it along the way. The second, analyzing the B major chord, appeared as an *analytical tool*. Relying on theoretical knowledge about the different notes' functions in the chord helped them with how they could direct their listening, and what was the most important note in the chord. The third, building the chord from the keynote, appeared as an *activity tool*. Once they knew which role they had in the chord (keynote, third and fifth), they could also tune the chord by starting with the keynote, then adding the fifth, and finally adding the third.

In episode 2A (Intonation of parallel chromatic lines) no tools seemed to be shared.

In episode 2B (Both accent and energy!), the terms upbeat, accent, gap, and energy appeared as *conceptual tools*. These helped the ensemble to define a shared conceptual space and also directed their listening attention.

In episode 2C (Intonation of a melodic rise), two tools were shared. Both the first tool, playing an open D as a point of reference, and the second tool, stop and listen to the C, F and the top note, appeared as *strategic tools*. This was because they were creating reference notes, and were extending other notes.

In episode 3A (Who is out of tune?) only one tool seemed to be shared: the suggestion of tuning the instruments. This appeared as an *activity tool*, with the aim of 'resetting' the ensemble's intonation.

In episode 3B (Exploring aspects of a rhythmic passage) three tools were shared in the first JPS. These were: (i) to play only the first note in the figure, which appeared as a *strategic tool*, removing technical challenges and making it easier to find a common pulse, (ii) the cellist consulting the violist's part, which appeared as an *analytical tool*, clearing up a misunderstanding, and (iii) suggesting/discussing more *sforzandos* and *crescendo*, which appeared as *interpretative tools*. The latter made the negotiations develop so that each ensemble member got new ideas, they increased the ensemble's understanding of the score and the music, and they implicitly showed how interpretation and simultaneity is dependent on each other. In the second JPS in episode 3B three tools were shared: (i) comparing the G-sharps, which appeared as a *strategic tool*, checking on another ensemble member's intonation by using one's own instrument, (ii) listening to the past, which appeared as an *analytical tool*, necessary for the third tool to be shared, and (iii) stop and listen, appearing as a *strategic tool*: listening while playing. Also, the cellist appeared as an important mediator in JPS 2.

5.6 The rehearsal process and aural awareness

The comprehensive research problem, asking in what ways the students are aurally aware during their ensemble rehearsals, can be discussed from several viewpoints. One is the way the ensembles' aural awareness manifests itself during the course of their rehearsals—taking into consideration both collective and individual perspectives, as well as the time in between the ensemble rehearsals. Therefore, I turn now to data from the focus group interview only, in order to shed light on the ensemble's thoughts on the rehearsal process and

aural awareness. The topics that are touched upon are aural awareness in different stages of the rehearsal process, the relation between individual and collective aural awareness in connection with rehearsing, and some wishes from the ensemble.

During the focus group interview, I asked the ensemble whether they were aurally aware in different ways in the early and the late stages of a rehearsal process. We had the following discussion:

Violinist 2:[53]	I think […] one gets a little better at being aurally aware after a while. In the first rehearsal one is often very concerned about one's own part […] One does not know one's own part that well, and one has to play right and count right. […] And then one forgets about listening for…
Cellist:	Balance
Violinist 2:	Yes, for example. […] It is important to coordinate the performance. But after a while one gets used to listen more and more to each other. Then I think one also gets more and more aurally aware, after a while.
Cellist:	But I think we did that. In the end, we knew the piece so well that we did not exactly have to pay attention to the score, you could just listen to the others. Find your place in a way. Then, everything becomes more automatic.
Aslaug:	So, in the beginning one is more self-absorbed? (*laughs*). And one does not have the energy to listen to the others (*they all agree*).
Violist:	I saw that when we rehearsed intonation in the beginning as well. We sat like this (*demonstrates how they were bending forward, concentrated*), and were perhaps mostly concerned about our own intonation. […] (Interview A, p. 9, my translation).

These comments show that the students believe they are 'changing' their aural awareness along the way. At first, they are focused on playing their own part,

53 Here, violinist 2 refers to the one who played second violin in the Shostakovich.

without much energy to listen to the others. Then they begin to listen more to each other. Relating this to Polanyi's (1958) concepts of focal and subsidiary awareness, one could say the string quartet's aural awareness moves from focusing on themselves as individuals taking part of a collective activity—that is, focal awareness of themselves and subsidiary awareness of the ensemble, to focusing on the collective performance with themselves as contributors—that is, focal awareness of the ensemble and subsidiary awareness of themselves.

Furthermore, in the excerpt above, the cellist points out another aspect of their 'changing' aural awareness. She says that in the end they knew the piece so well that they could "just listen to the others." She concludes that when one knows a piece this well, "everything becomes more automatic." Unfortunately, we did not discuss her choice of the word "automatic" any further, but as the reflexive researcher I argue that it represents an important discussion about where awareness stops and automaticity begins. I will return to the question of automaticity and its relation to aural awareness in chapter 9.

I also asked them in the focus group interview how they are aurally aware when they are practicing alone, preparing for the ensemble rehearsals. One of the violinists and the violist both answered that they work on intonation. The violinist emphasized that there are different techniques: "checking with open strings", and "relating other notes to these open strings" (p. 11), while the violist underlined the importance of practicing intonation by oneself, and argued that "it is difficult to hear when playing as an ensemble, whether it is you or someone else [playing out of tune]" (p. 11). Expressing the opposite point of view, the other violinist replied that she does not like to practice intonation alone, because when she comes back to the group "it will sound completely out of tune." Instead, she likes practicing rhythmic passages. Asking the students about how they prepare for the ensemble rehearsals might seem to be outside the scope of the thesis, but I will return to this issue in chapter 9, and explain how individual preparation relates to the collective rehearsals.

One thing the ensemble expressed a desire for more of, is guidance in how to rehearse chamber music. They emphasized that their teacher gives some advice, but as the cellist pointed out, it takes a lot of time just to find out "whether to rehearse intonation, or rhythm, or what to do really" (p. 6). I will have more to say about this topic in chapter 10.

5.7 Summary

The empirical data from video observations and the focus group interview with the string quartet has been thoroughly analyzed and primarily presented in this chapter through reflexive deconstructions and reconstructions of chosen in-depth episodes. These descriptions then formed the basis for a further discussion of the findings in relation to the research questions and the comprehensive research problem.

As a preparation for the cross-case discussions in chapter 8 and 9, the shared tools found in the in-depth episodes were labeled in 5.5. In sum, I found that the problem-solving processes comprised four different kinds of tools:(i) strategic tools, (ii) analytical tools, (iii) activity tools, and (iv) conceptual tools. I will return to these in chapter 8, in order to discuss them in relation to the tools shared by the other ensembles.

Finally, in order to prepare for the reflexive level of "critical interpretation" (Alvesson & Sköldberg, 2009) in chapters 9 and 10, I identified some aspects in 5.6 that were particularly salient in the focus group interview: aural awareness in different stages of the rehearsal process, the relation between individual and collective aural awareness in connection with rehearsing, and some wishes from the ensemble.

6 Case B: The clarinet trio

This chapter is a within-case display of "the clarinet trio." It describes and explains characteristics of this particular case, according to the theoretical and analytical principles summarized in the *Introduction to Part II*.

6.1 The ensemble and their repertory

The clarinet trio ensemble consisted of third year students: a female clarinetist and a female cellist studying to become music teachers, and a male pianist studying to become a performer. When I observed this ensemble they rehearsed *Trio for Piano, Clarinet (or Viola) and Violincello* in A Minor, op. 114, by Johannes Brahms (1833–1897). I will briefly examine this composition more closely, to give the reader an introductory impression of the music they were rehearsing.

The Trio was composed in 1891, in Austria. At this time Brahms had recently begun announcing to his friends that his composing career had reached its end; however, during a visit to Meiningen, in the spring of 1891, he met the clarinetist Richard Mühlfeld, and was so struck by his artistry that he was inspired to write four pieces for the clarinet, among these the trio in A minor (Keller, 2011, p. 125; Ulrich, 1966, p. 314). As the title of the Trio indicates, it is possible to substitute the clarinet with a viola, and according to Keller (2011) Brahms tried out the viola version before the premiere, but he preferred the clarinet version (p. 126). It is worth noting that the clarinet that Brahms calls for in this piece is the one pitched in A, which reaches the low C sharp (in natura) and has a richer or darker sound quality than the more commonly used B-flat clarinet.

The composition is in four movements. During the video observations, the ensemble rehearsed the second, third and fourth movement (in italics below):

1 Allegro
2 *Adagio (D major)*
3 *Andantino grazioso (A major)*
4 *Allegro (A minor)*

The second movement is in D major. According to Keller (2011) this movement is where the clarinets' subtleties are most deeply explored, leading the player through "ample opportunities to explore the instrument's wide range of pitch and dynamics" (p. 126). The third movement is in A major. Berger (2001) says of this movement that it at times "swings along like a true Viennese waltz; at other times, though, Brahms complicates the rhythm to such an extent that it becomes difficult to sense the underlying triple meter" (p. 110). Of the fourth movement, in A minor, Berger (2001) says "the highly rhythmic activity of the opening subject [...is] contrasted with the sustained subsidiary theme" (p. 110). The time signature in this movement is 2/4 with 6/8 in parenthesis. Throughout the movement, the alternation between subdivisions in *two* (most often represented by sixteenth-notes) and *three* (most often represented as triplets or eight-notes in pairs of three) is salient. Brahms also alternates between the time signatures 2/4, 6/8 and 9/8, in order to underline these different rhythmic structures.

Table 7 shows an overview of which movements the ensemble played during the rehearsals I observed, and when the focus group interview took place.

Rehearsal 1 November	**Rehearsal 2** May	**Rehearsal 3** May	**Focus group interview** June
Second movement	Third movement	Fourth movement	

Table 7: Overview of observed rehearsals and the focus group interview, the clarinet trio.

6.2 First rehearsal

The repertory of the first rehearsal was the second movement of Brahms's Trio. I begin with a look at the kinds of musical problems the students faced and chose to work on.

The analysis of the first rehearsal shows that the ensemble primarily described problem states in relation to dynamics (10), phrasings (8) and energetics (7), but also in relation to division of musical roles (4), tempo (4), balance (2), entrances (2), and form (2). Context, timbre, transitions, and rhythms were each addressed once. Furthermore, their goals seemed to be either (a) to improve their ensemble playing (simultaneity/ coordination), (b) to improve their ensemble playing, *and* to improve their understanding of the musical score or the composer's intentions (interpretation of notation/character), or (c) to improve interpretation alone. Altogether, seven episodes had simultaneity as a goal, four episodes had a goal of both simultaneity and interpretation, and 11 episodes had a goal of interpretation.

Among the episodes of the first rehearsal, there are two I would like to examine in depth, because they exemplify one way the ensemble is partly aurally aware and ends up sharing few tools, and one way the ensemble is aurally aware and shares several tools. These episodes have been given a 'serial number' and a title, as shown in table 8.

	Title of the episode	**Problem states and goals**
Episode 1A	"Entering without the count of one"	Entrance, energetics *Simultaneity*
Episode 1B	"Chords as backcloth for the piano solo"	Division of musical roles, balance, phrasing *Simultaneity and interpretation*

Table 8: Overview of in-depth episodes, first rehearsal, the clarinet trio.

Episode 1B was included in the video excerpts the participants saw before the focus group interview. However, the ensemble did not comment on it, and thus the analysis of both episodes is based on the video observations only.

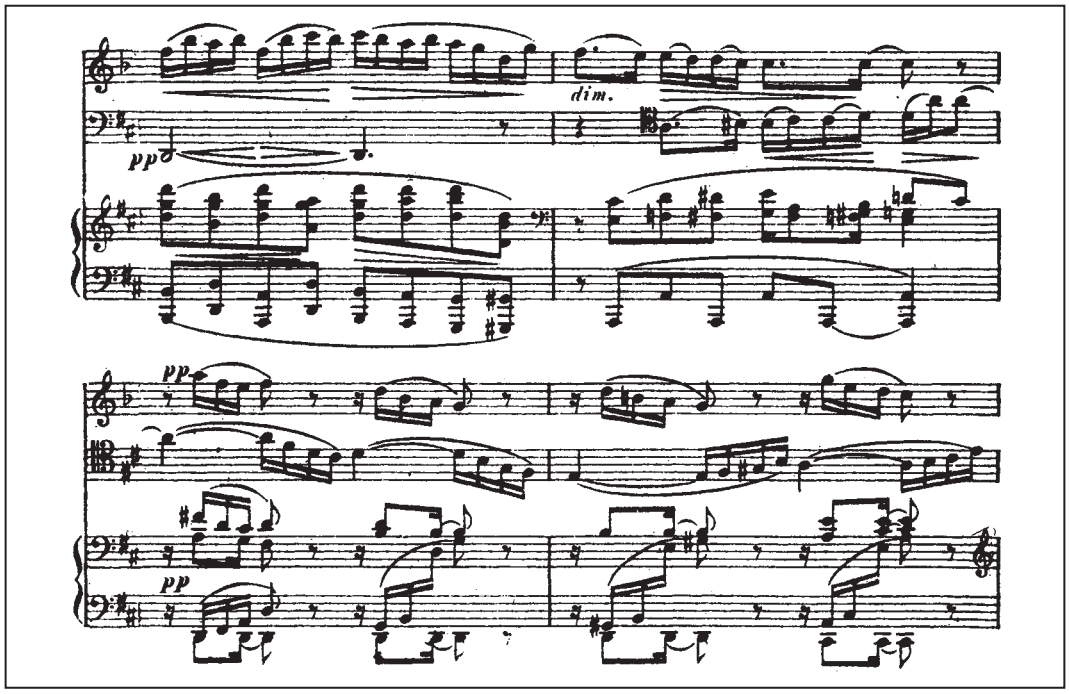

Figure 10: Measures 3–6 (Brahms, n.d., p. 12).

6.2.1 Episode 1A: Entering without the count of one

In this episode, the ensemble works on the opening of the second movement of Brahms's Trio. The problem defined by the ensemble is the entrance of the clarinetist and the pianist in measure 5 (third measure in figure 10), combined with the energetics of what the cellist is playing. The clarinetist and the pianist have a simultaneous entrance after only a sixteenth-rest, while the cellist holds her tone over the bar-line. Their goal is simultaneity, that is, to coordinate what they are playing rhythmically.

A Joint Problem Space is constructed around problems with the energetics in the first measures of the movement. Here are excerpts and summaries from the ensemble's negotiations:

Pianist: Should we play from where you (*directed to the cellist*) play the theme?

Clarinetist: Can we try to make no *ritardando* whatsoever […] so that it becomes (*conducting even beats*). *The pianist agrees.*

Cellist:	I think it should be straight, from the beginning. Am I making *ritardando*?
Clarinetist:	No. Because you hold that tone over the bar-line. […] And we're having a sixteenth-rest… *They play from the beginning, stopping when they reach the end of measure four.*
Cellist:	We make *ritardando* here! It should be totally straight!
Clarinetist:	But I only play one note, so I cannot do any *ritardando*. *The cellist laughs. […] They decide to play directly from the fourth measure.*

Reflexive deconstruction

The pianist is the one directing their attention to a musical problem, by suggesting they play from where the cellist has the theme. The clarinetist then suggests that they make no *ritardando* and conducts even beats. Hence, the clarinetist is the one defining the current problem state as having to do with energetics, and she is the one who starts constructing a Joint Problem Space. The cellist co-constructs this JPS by agreeing that the beginning should be straight, but she also expands their construction of the JPS by asking the others whether she is making a *ritardando*.

The first part of the definition of aural awareness in ensemble rehearsals concerns attentiveness. In this episode, the ensemble members' attentiveness seems to be directed to the common problem state, but in different ways. The pianist's attentiveness seem to be directed to the overall problem with the energetics, while the clarinetist and cellist's attentiveness is problem-solving oriented: not making *ritardando*, playing straight, and finding out who is making the *ritardando*. The clarinetist answers quickly "no" when the cellist is asking whether she (the cellist) is making the *ritardando*. Here, I would like to make an observation as the reflexive researcher of this study: from my point of view as the observer of this episode, it *is* in fact the cellist who is slowing down, which means the clarinetist's conclusion is different from mine. I comment on this because it has an impact of the analysis of this episode, in particular in the cross-case analysis in chapter 8.

As regards the second part of the aural awareness definition, they are briefly sharing some ideas from their mind's ears. The clarinetist shares her idea of how measure four should sound when she asks if they can do "no *ritardando* whatsoever," and she shares her point of view on whether the cellist is making a *ritardando* when she answers the cellist's question. The cellist is sharing ideas from her mind's ear when she concludes that they *are* making a *ritardando*, but that "it should be totally straight!" The available knowledge resources they utilize are the professional term *ritardando*, as well as practical aural skills.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the pianist identifies a musical problem, and the clarinetist and the cellist agree. They are only partly aurally aware according to my definition: their attention seems to go in different directions, they are not sharing many ideas from their mind's ears, and they utilize only a few available knowledge resources.

This means that few knowledge resources are accepted into the JPS, and that they are sharing few tools. The first tools that are shared are some comments helping the ensemble to make their interpretation explicit: to make no *ritardando,* and to play straight. When it comes to further problem-solving they suggest one more tool in the end, which is to rehearse measure four alone. Altogether, I would say the negotiations contribute to constructing the JPS, rather than solving the problem they construct. This might be because they do not fully maintain the JPS, and they do not explicitly talk about the issues with the pianist's and clarinetist's entrance as part of the problem.

6.2.2 Episode 1B: Chords as backcloth for the piano solo

In this episode, the ensemble works on the second movement. The problem state described by the ensemble is the division of musical roles. In relation to this they also discuss balance, and they work on the accompaniment played by the clarinetist and the cellist, and the phrasing of this. The ensemble's goal is both simultaneity and interpretation; they want to coordinate their playing, but also to create a common idea of how to interpret the solo and accompanimental roles. At this moment in the music (third measure in figure 11), the piano is introducing the second theme, while the clarinetist is playing even 32nd-notes, and the cellist is playing dotted sixteenth-note figures.

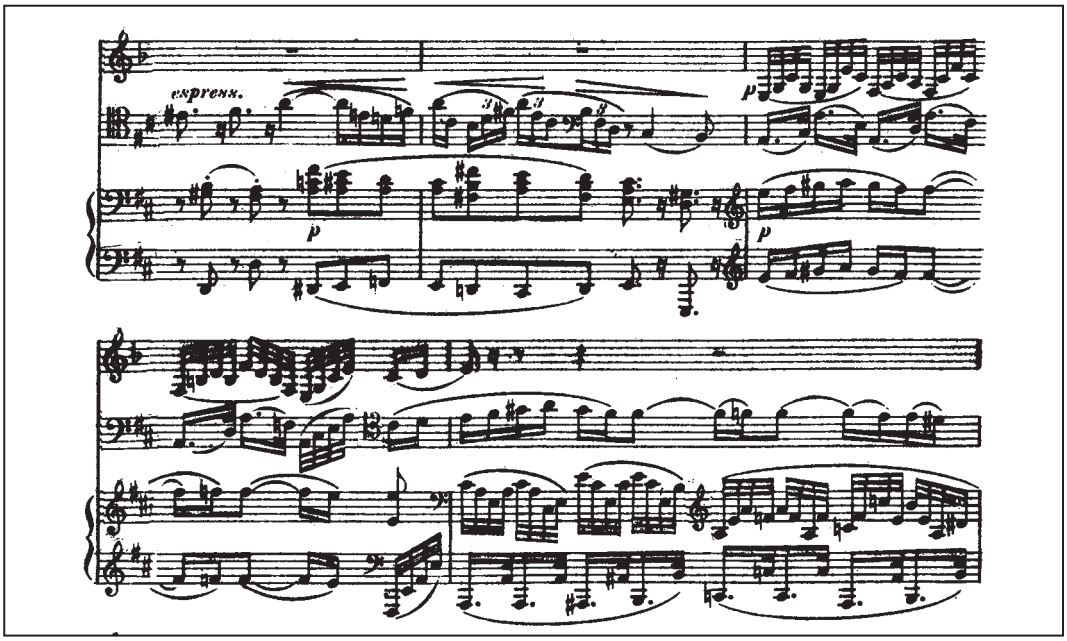

Figure 11: Measures 13–17 (Brahms, n.d., p. 13).

A Joint Problem Space is firstly constructed around problems with the balance, and secondly around problems with the phrasing of the accompaniment. Here are excerpts and summaries from the ensemble's negotiations:

Clarinetist:	In [measure] 15, can you (*directed to the pianist*) shine a little more?
Pianist:	Yes, absolutely.
Clarinetist:	Because you are the one with the melody, and we are only accompanying you. […]
Pianist:	Yes, that's a good idea.
Cellist:	I have *pianissimo* actually.
Clarinetist:	And I have *piano* without any accents. It's just a backcloth-kind-of-thing.
Cellist:	Yes, one big backcloth. *The cellist and the clarinetist play once alone.* Should we have tried to think about it more as chords? A little like (*sings it*). […]

Clarinetist: A little, maybe. As long as we don't play an accent on the first beat.

The two of them play once more. Now they are satisfied, but the cellist underlines the importance of not making too many accents (sings), and that it should be in flow.

Reflexive deconstruction

The clarinetist is the one identifying a musical problem, when she suggests that the pianist should "shine a little more." The clarinetist is also the one who starts constructing a Joint Problem Space, by stating that the pianist has the melody, and that she and the cellist are only accompanying him. The cellist supports the clarinetist and co-constructs this JPS by saying that she only plays *pianissimo*; the two of them conclude that they are only a backcloth for what the pianist is playing.

As regards the definition of aural awareness, the whole ensemble seems to be attentive, to the score, to their performance, and to each other. Furthermore, they are sharing different ideas from their mind's ear. In the first comment, the clarinetist has assessed their musical performance and shares that she thinks the pianist should shine a bit more because of the balance, and because he has the melody. When the cellist shares her suggestions that she and the clarinetist could think about their parts more as chords, there seems to be the interplay between ideas in her mind's ear and theoretical or practical knowledge resources leading to this conclusion. They are also combining theoretical or acquaintance knowledge with the ideas in their mind's ear when they are concerned about not making too many accents.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the clarinetist identifies a musical problem and the others agree. They seem to be aurally aware, in terms of attentiveness, in sharing of ideas from their mind's ears, and in the utilization of available knowledge resources.

Four tools are shared in the ensemble. The first of these is when the clarinetist is asking the pianist to shine more when he is playing the theme. This is an opinion from the clarinetist, but it mediates the pianist's understanding of how he might interpret the theme. Another tool is shared when the clarinetist

comments that the piano is playing the melody and the others having an accompanimental role. This statement mediates the whole ensemble's understanding of the balance and the way the musical roles are distributed. Two other tools are shared, both mediating the clarinetist's and cellist's efforts to decide how to play the accompaniment: (i) stating the dynamics in their parts, and (ii) suggesting thinking of the chords. By stating the dynamics in the parts they are underlining their roles as accompaniment, and by suggesting to think of the chords they are mediating their understanding of the underlying harmonics which helps them choose their phrasing.

6.3 Second rehearsal

The repertory of the second rehearsal was the third movement of Brahms's Trio. Again I begin with a brief look at the kinds of musical problems the students faced and chose to work on.

The analysis of the second rehearsal show that the ensemble primarily described problem states in relation to phrasings (8), energetics (5), dynamics (4), and tempo (3), but also in relation to entrances (2), intonation (2), and rhythms (2). Balance, form, character, harmonics, entirety, musical conversation, pedal choices, pizzicato techniques and transitions were each addressed once. Their goals seemed to be either simultaneity, a combination of simultaneity and interpretation, or interpretation. Altogether, three episodes had simultaneity as a goal, eight had a goal of both simultaneity and interpretation, and six had a goal of interpretation.

	Title of the episode	**Problem states and goals**
Episode 2A	"The world's longest line"	Phrasing *Interpretation*
Episode 2B	"Rhythmic displacement"	Rhythm *Simultaneity and interpretation*
Episode 2C	"It will probably be all right"	Rhythm, phrasing *Simultaneity and interpretation*

Table 9: Overview of in-depth episodes, second rehearsal, the clarinet trio.

Among the episodes of the second rehearsal, I will describe three in depth, because they exemplify very different kinds of negotiations and different

degrees of aural awareness. These three episodes have been given a 'serial number' and a title, as shown in table 9.

Episode 2B and 2C were included in the video excerpts the participants saw before the focus group interview. Hence, excerpts from the interview are included in the analysis of these two episodes. The analysis of 2A is based on video observations only.

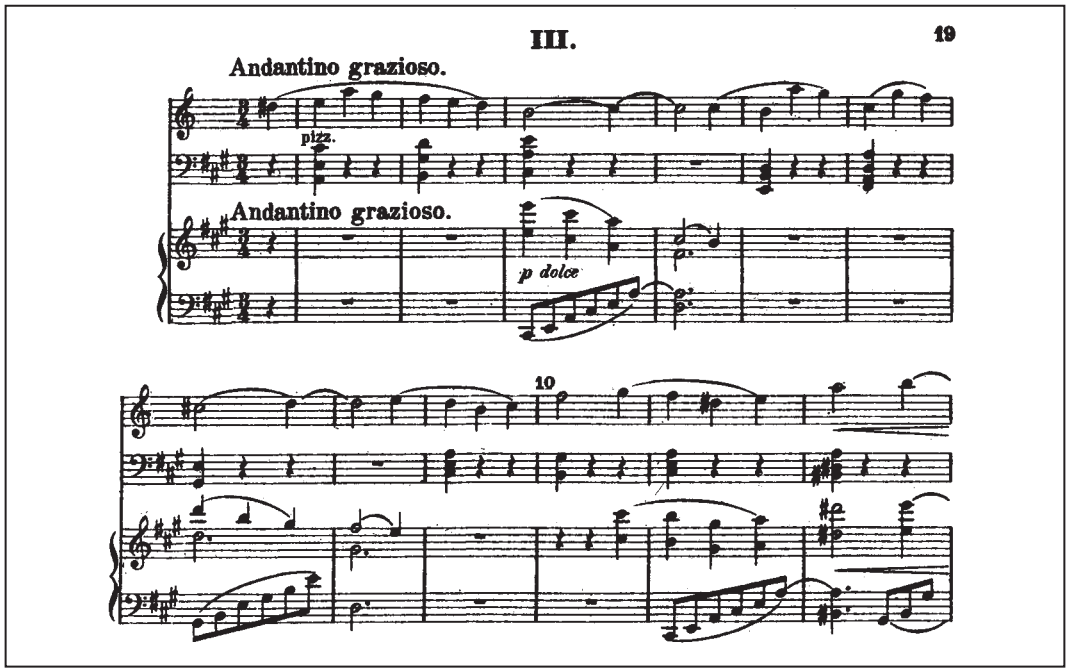

Figure 12: Measures 1–12 (Brahms, n.d., p. 19)

6.3.1 Episode 2A: The world's longest line

In this episode, the ensemble works on the opening of the third movement. The primary problem state described by the ensemble is the opening line in the clarinet part, and their goal is interpretation. The opening measures are shown in figure 12.

A Joint Problem Space is constructed around how to phrase the melody. Here are excerpts and summaries from the ensemble's negotiations:

Cellist: How do you picture the beginning?

Clarinetist:	I try to think of it as the world's longest line. I'm not sure if I succeed.
Pianist:	I think you play very well. *The cellist agrees.*
Clarinetist:	The clue, I guess, is to not (*sings and conducts with an emphasis on each beat*). I picture waves. Like this kind of day at the ocean (*wavers from side to side*). […]
Cellist:	*Sings the melody and emphasizes the half note in measure 3*. Are you (*directed to the clarinetist*) aiming for that one [the half note]?
Clarinetist:	*Sings measure 3*. Yes, but I don't stop totally, because I have to move on. *The cellist sings from measure 3 and when she approaches measure 7-8 the clarinetist says*: and then it's still not over...
Cellist:	No, it's not
Clarinetist:	It finishes after about 20 measures. This is so Brahms! […]

Reflexive deconstruction

The cellist is the one who invites the clarinetist to explain how she wants to interpret the melody from the beginning of the movement: "how do you picture the beginning?" With this comment, she starts constructing a Joint Problem Space, and this is soon co-constructed by the clarinetist who meets the challenge and answers immediately: "I try to think of it as the world's longest line." Then, because the pianist quickly offers support, by saying she plays very well, they are all very attentive to the problem and the task of solving it together.

The clarinetist is the one sharing most ideas from her mind's ear. These are primarily thoughts about how the melody might be interpreted: as the world's longest line, as waves, and as a day at the ocean. She is also explaining how she believes it is a line demanding that she cannot stop, that she has to move on. The cellist is also sharing one idea from her mind's ear; she is singing the phrase with an emphasis on the half note in the third measure, which suggests that this is how she pictures the phrase. Then she is asking whether the clarinetist also thinks like this.

In this episode the ensemble, and in particular the clarinetist, is mainly utilizing acquaintance knowledge. There are clear ideas based on musical conventions. For example, the clarinetist explains how she believes it should *not* sound, by singing and conducting with an emphasis on each beat. Also, she presents the idea that the phrase goes on for a number of measures, and how she has to consider this when she performs the melody. The latter is confirmed by another kind of acquaintance knowledge: the clarinetist comments that "this is so Brahms." In order to make such a statement, one has to be familiar with Brahms's style.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the cellist and clarinetist identify a musical problem, and the two of them are also the most active in solving it. The cellist and clarinetist seem to be aurally aware in terms of attentiveness, sharing of ideas from their mind's ears, and utilization of available knowledge resources.

Four tools are shared in the ensemble: (i) the clarinetist singing and conducting, emphasizing each beat, (ii) the cellist singing, emphasizing the half note in measure 3, (iii) the clarinetist describing the music in metaphors, and (iv) the clarinetist explaining how long her phrase is. The first and second shared tools (singing and conducting) mediate interpretative understandings. When the clarinetist sings and conducts, she is using both her voice and her hands to emphasize how she does *not* want it to sound. Later, when the cellist sings the melody, the singing mediates the ensemble's understanding of how she thinks it *should* sound. The third tool mediates the clarinetist's ideas about how she pictures the melody in metaphors, and hence it could also mediate the other ensemble members' understanding of the opening melody. The fourth tool also mediates the ensemble's understanding of the interpretation. Here, the clarinetist is informing the others that the melodic line goes on for about 20 measures.

6.3.2 Episode 2B: Rhythmic displacement

In this episode, the ensemble is working on a rhythmic displacement in the third movement. The primary problem state described by the ensemble is the rhythm in the cellist's part (fourth measure in figure 13) and the coordination of

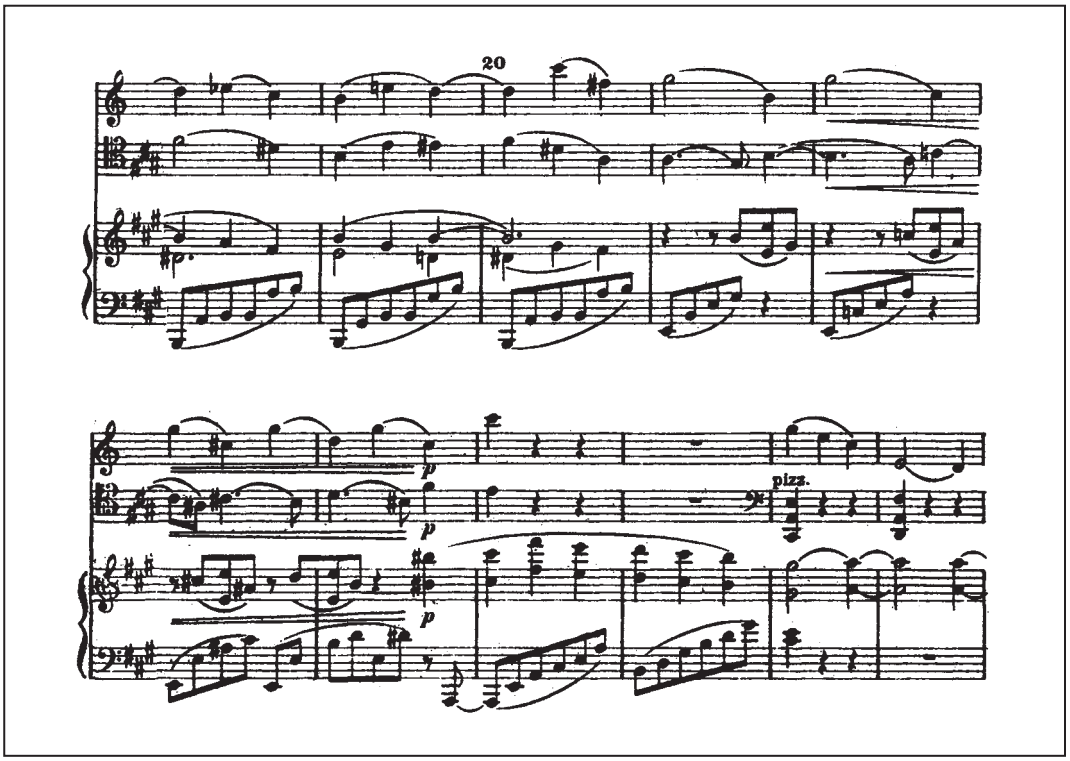

Figure 13: Measures 18–28 (Brahms, n.d., pp. 19-20).

the cellist's and the clarinetist's upbeat to measure 25 (eight measure in figure 13). The goal is both simultaneity and interpretation.

A Joint Problem Space is firstly constructed around the interpretation of the upbeat, and then constructed around the coordination of the rhythm more generally. Here are excerpts and summaries from the ensemble's negotiations:

Cellist:	This upbeat [to 25] must be clearer.
Clarinetist:	What do you (*directed to the cellist*) play there [in measure 21]?
Cellist:	*Sings and plays her part.* It's like on, on, more, more, more, right. And then: ti-ri (*sings the end of the phrase*). […] *They play again.*
Clarinetist:	Did you (*directed to the cellist*) finish very early now?

Cellist: Yes, that could be, but do you (*directed to the pianist*); ta-ra (*sings*), is that the upbeat?

Clarinetist: Let me have a look (*leans over the music stand and sees in the cellist's part*).

Cellist: Perhaps, when we have ti-rim (*sings*), it has to be ti-*rim* (*emphasizes rim*), like an upbeat to the next one. […]

Clarinetist: Yes (*standing, thinking*)

Cellist: Then it's more like tapering-off […].

The cellist writes in her part, the clarinetist is still standing, thinking, and the pianist practices quietly. They play again.

Cellist: Yes, yes, yes. That was much better! Now, you *(directed to the pianist)* were much clearer on your upbeat.

The clarinetist leans once more over the music stand and looks in the cellist's part, thinking. […]

Clarinetist: You (*directed to the cellist*) are also landing on the first beat?

Cellist: Yes.

Clarinetist: *Sings her part*. Because we are not together there. *The two of them play once.*

Cellist: *Sings.* Are you with me?

Clarinetist: No (*sings and snaps her fingers*). Ta-ta. *She takes her music stand and puts it beside the cellist's music stand*. I only have a quarter-note. It's just that it tricks us to believe that it's 4/4 (*sings her part*).

Cellist: So it's actually on the first beat […]

Clarinetist: Yes, and we're together there. […]

They play […] The cellist comments twice that she plays wrong and wants to play again.

Cellist: I just have to count! *They play two more times.*

Reflexive deconstruction

The cellist is the one who first identifies a musical problem, when she says, "This upbeat [to 25] must be clearer." She is starting to construct a Joint Problem Space.

Before moving on with the deconstruction, I want to share a comment as the reflexive researcher of this study. The cellist is pointing out the upbeat as a problem. However, the clarinetist responds to this by asking what the cellist is playing, and in her next comment she asks whether the cellist finished too early. Thus, from the beginning of the episode the cellist and the clarinetist are constructing two different Joint Problem Spaces: the cellist is concerned with interpretation, and the clarinetist is concerned with coordination. This means there is no *single* Joint Problem Space until the end of the episode—that is, after the clarinetist has put her music stand beside the cellist's music stand and talked about the time. During this episode, then, there are two parallel problems trying to be solved for quite a long time, and they are best discussed separately.

Taking the aural awareness definition into consideration, it is primarily the cellist herself who is attentive within the JPS she wants to construct. Through her comments it becomes clear she is attentive to how the upbeat should be interpreted musically, "It's like on, on, more, more, more, right," and also how the phrasing should be: "it has to be ti-*rim* (*emphasizes rim*)." These comments can also be seen as sharing of ideas from her mind's ear, and the knowledge resource she utilizes seems to be acquaintance knowledge, in terms of musical conventions.

As regards the JPS the clarinetist wants to construct, she is the one showing most attentiveness, and this is directed to interpretation of the score; she seems to doubt that they are playing the right notes. One of the ideas the clarinetist shares from her mind's ear is her conclusion that "we are not together there." The other is when she explains how she understands the composer's intentions: "It's just that it tricks us to believe that it's 4/4." Hence, she seems to be utilizing an array of knowledge resources: theoretical, practical, as well as acquaintance knowledge.

After this comment, the cellist and the clarinetist finally construct a Joint Problem Space, and it is the problem originally suggested by the clarinetist that gets resolved, when the cellist says: "So it's actually on the first beat," and the clarinetist responds: "Yes, and we're together there."

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the cellist and the clarinetist want to construct two different Joint Problem Spaces: one concerning the interpretation of the music, and one concerning the interpretation of the score with simultaneity as the goal. In the end, the latter becomes *the* Joint Problem Space of this episode. The pianist is not verbally active in these negotiations, but the cellist and the clarinetist seem to be aurally aware regarding the problem they have constructed, in terms of attentiveness, sharing of ideas from their mind's ear, and utilization of knowledge resources. In the further analysis, I have identified shared tools from both problem-solving processes, because all the tools are part of the active negotiations within the ensemble.

Two tools are shared in the cellist's problem-solving process: (i) metaphors describing the cellist's understanding of the music, and (ii) the cellist singing how she believes the music should be phrased. Both tools mediate the other ensemble members' understanding of how the cellist interprets the music. Furthermore, three tools are shared in the problem-solving process constructed by the clarinetist: (i) the clarinetist using her aural skills in order to assess whether the cellist finishes the phrase after her, (ii) the clarinetist looking at the cellist's part, and (iii) the clarinetist singing her part. The first tool is used in order to assess the ensemble's performance, the second tool is used in order to compare their performance with the score, and the third tool is used by the clarinetist in order to explain how her part sounds alone.

The ensemble did not comment on episode 2B explicitly in the focus group interview, even though the episode was included in the video excerpts. However, the clarinetist did commenting on it implicitly:

> Clarinetist: When we discuss rhythmical issues, […] we could have just looked in the score much earlier and see what it said, instead of discussing for ten minutes whether we are supposed to be together or not (*laughter*) (Interview B, p. 6–7, my translation).

With this comment, the clarinetist suggests that the ensemble could have made more effective use of the score. This is interesting, because this is actually something she does in episode 2B, and she seems to use it to help solve the problem in that episode; she checks the cellist's part twice, in order to understand how their separate parts relate to each other. However, in her comment from the focus group interview, the clarinetist might be referring to the full score that the

pianist has. That would require the pianist to take a more active verbal part in the negotiations, something he talked about in the focus group interview:

> Aslaug: Do you (*directed to the pianist*) feel that you have more overview, since you always have the score?
>
> Pianist: I should have (*laughter*). I say way too little. That is, I should be able to point out so much more. But I am very shy. (Interview B, p. 6, my translation).

What the pianist says here is important in order to understand all the negotiations of the clarinet trio. My general impression as the researcher is that the pianist is less verbally active than the clarinetist and the cellist.

6.3.3 Episode 2C: It will probably be all right

In this episode, the ensemble works on a transition in the third movement. The problem state described by the ensemble is the rhythm and the phrasing of this transition. The goal is both simultaneity and interpretation, and the measures they are working on are 139 and 140. In this transition, the clarinet is tapering-off, the cellist has one kind of upbeat-figure, and the pianist has another upbeat figure (second measure in figure 14).

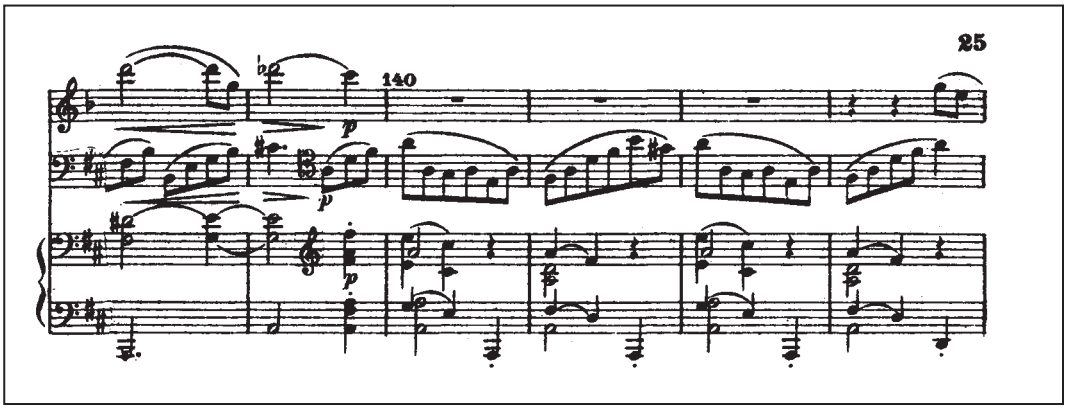

Figure 14: Measures 138–143 (Brahms, n.d., p. 25).

A Joint Problem Space is constructed around the problems of coordinating and interpreting the transition from measures 139 to 140. Here are excerpts and summaries from the ensemble's negotiations:

Clarinetist:	That transition […] around 140 […]. Do you (*directed to the cellist*) start a little late on that upbeat? […]
Cellist:	I just thought I could take some time there.
Pianist:	It's okay you take time, but […] it should be in tempo (*sings to himself*). […] *They play from some measures before.*
Clarinetist:	You see, I've got a quarter-note. […] *They play once again.* It sounds weird (*goes to the cellist*). What have you (*directed to the cellist*) got? *The cellist sings, and the clarinetist looks in the cellist's part*. Okay.
Cellist:	At which quarter-note do you arrive? The last one?
Clarinetist:	The last quarter-note (*sings*). […] *They play again.*
Clarinetist:	I think it is weird.
Pianist:	Yes, because *we* are together there.
Clarinetist:	Are we? […] Okay, now I'll try not to count. […]
Cellist:	If you only listen I think it will work. *They play again.*
Clarinetist:	I don't manage it. […]
Cellist:	We'll play 137, a little slower […] *They play.*
Cellist:	Because I'm (*shows that she takes a breath before playing on*). *They play again.*
Pianist:	It's weird, because you are tapering-off and I have staccato (*sings*).
Clarinetist:	You (*directed to the pianist*) are moving on, and I'm ending. Do you think it's on purpose, that it's different?
Pianist:	I guess so.
Clarinetist:	[…] Perhaps if I don't think about it so much, it will be better. It's usually like that. But then we have to

do our thing, convincingly, so that it doesn't sound like we are both playing wrong. Or, perhaps I should withdraw totally, like really quiet.

Pianist: A little, but a normal tapering-off.

Reflexive deconstruction

The clarinetist is the one who identifies a musical problem, and already in the first comment she is trying to construct a Joint Problem Space, by asking the cellist: "Do you start a little late on that upbeat?" This JPS is then tentatively co-constructed by the pianist who says to the cellist: "It's okay you take time, but it should be in tempo." Up to this point, the ensemble's attentiveness has been directed at solving the constructed problem and how the performance can be improved. However, in the following negotiations their attentiveness gets more centered on what it says in the score: "You see, I've got a quarter-note" (clarinetist), "At which quarter-note do you arrive?" (cellist), and "It's weird, because you are tapering-off and I have staccato" (pianist).

As regards my definition of aural awareness I would say they are mainly sharing ideas from their mind's ears in the beginning of the negotiations. At this point they are assessing their performance, and suggesting that the cellist not takes too much time, but rather plays in tempo. Another idea that the clarinetist shares, is this one: "Okay, now I'll try not to count." With this comment, the clarinetist also shares what she *has* been trying to do: to count while playing.

The ensemble is not utilizing many available knowledge resources. They are using a number of professional terms, such as transition, upbeat, quarter-note and *staccato*, which can be seen as theoretical knowledge. They are also utilizing some acquaintance knowledge, when discussing whether the different interpretation marks in the clarinetist's and pianist's parts are meant to be different, and how they are going to perform it.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the clarinetist identifies a musical problem, and attempts to construct a Joint Problem Space around their lack of coordination in the transition between measures 139 and 140. However, what happens is that they do not manage to construct this JPS. When the pianist lets the clarinetist know that he has the same rhythm as she, only a

quarter-note, they start focusing on how their two quarter-notes are different. This way, they start constructing another JPS, which is to interpret the composer's intentions, instead of maintaining and solving the original problem, which was to coordinate their playing. Hence, their goal also changes, from one of simultaneity to one of interpretation. In the end, they do reach the goal of interpretation by deciding to play their *staccato* and tapering-off very clearly, but they do not solve the original problem of timing the quarter-notes with the cellist's upbeat.

In the focus group interview, the clarinetist commented on episode 2C:

> Clarinetist: […] I was lagging behind, remember? It was where you (*directed to the cellist*) start the melody, the place where our teacher said that our break was a bit too long.
>
> Pianist: Yeah, right.
>
> Cellist: […] that one, yes.
>
> Clarinetist: […] I never got really […] comfortable with that break […] because of my part that was kind of just hanging over […] I never felt I got the hang of it […] We found a kind of solution […] so I just thought it was good in a way, with intuition, because we found out later that the break was too long. It became a shorter break, more of a natural musical comma. (Interview B, p. 3–4, my translation).

In these comments the clarinetist explains that she never got comfortable with the break before the cellist's upbeat, when the cellist took a short breath. From the point of view of the reflexive researcher, whose goal is to make explicit some of the interpretations "behind" the results, this is particularly interesting, because in the focus group interview the ensemble is referring to a solution they made *after* this second rehearsal: to make the break shorter. In the episode, on the contrary, I would say they did not find a solution, because they constructed a JPS, without reaching their goal. It might seem as if the teacher's suggestions was part of their problem-solving process; however, this seems to have taken place after the rehearsal, and thus outside the negotiations of episode 2C.

6.4 Third rehearsal

The repertory of the third rehearsal was the fourth movement of Brahms's Trio. I begin again with a look at the kinds of musical problems the students faced and chose to work on, through the concepts of problem states and goals.

The analysis of the third rehearsal shows that the ensemble primarily described problem states in relation to dynamics (8), rhythms (7), character (6), tempo (5), phrasing (5), and energetics (4), but also in relation to form (3), articulation (3), transitions (3), harmonics (2), and entirety (2). Melody and time were addressed once. Furthermore, their goals seemed to be either simultaneity, a combination of simultaneity and interpretation, or interpretation. Altogether, eight episodes had simultaneity as a goal, seven episodes had a goal of both simultaneity and interpretation, and eleven episodes had a goal of interpretation.

Among the episodes of the third rehearsal there are two I will describe in depth, because they demonstrate the significance of the number of shared tools, when the problem state and goal is the same: rhythm and simultaneity. A JPS in which few tools are shared works differently than does one with several shared tools. These episodes have been given a 'serial number' and a title, as shown in table 10.

	Title of the episode	**Problem states and goals**
Episode 3A	"Playing separately and together"	Rhythm *Simultaneity*
Episode 3B	"Skipping a rest—ending up ahead"	Rhythm *Simultaneity*

Table 10: Overview of in-depth episodes, third rehearsal, the clarinet trio.

Episode 3A and 3B were included in the video excerpts the participants saw before the focus group interview. Hence, excerpts from the interview are included in the analysis.

6.4.1 Episode 3A: Playing separately and together

In this episode, the ensemble works on the fourth movement. The primary problem state described by the ensemble is the rhythm in the cellist's and the clarinetist's parts. They are supposed to be playing partly separately and partly

together: in measures 77 and 78 (third and fourth measure in figure 15) the rhythms are different, while from measure 79 the rhythms are the same, and played homorhythmically; however, the pianist is playing against the clarinetist's and cellist's emphasis here. The ensemble's goal is simultaneity; that is, the goal is to coordinate the performance.

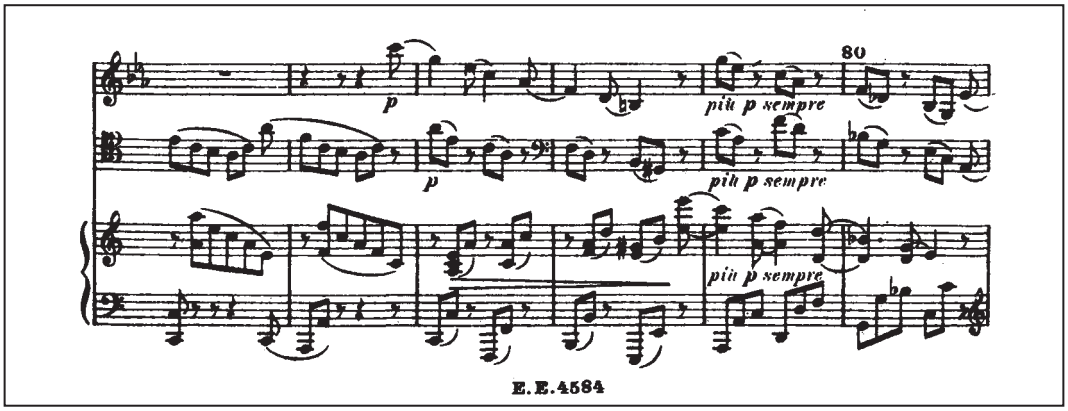

Figure 15: Measures 75–80 (Brahms, n.d., p. 31).

A Joint Problem Space is constructed around the coordination of the rhythm. Here are excerpts and summaries from the ensemble's negotiations:

Clarinetist:	It sounds so weird. […] *The clarinetist walks over to the cellist and looks in her part. They sing.* You are also on. We're playing against each other, but we're supposed to be together. *Looks in her own part.* From 79 […] I'm also on the beats.
Cellist:	But we're playing apart? […] *Looks in her part.* Aha, I'm playing ta-*ram*, ta-*ram* (*emphasizing ram*). But it is *ta*-ram, *ta*-ram (emphasizing ta). Now I've got it […] *They play.*
Clarinetist:	Now we're playing against each other again. Or is it supposed to be like this? […] *Sings to herself. They play again, interrupt after measure 80.*
Cellist:	There, it's supposed to be separate
Clarinetist:	Is it?

Cellist: It's a dialogue.

Pianist: No, not in my score. You are supposed to be together. *The clarinetist walks over to the cellist and looks in her part, while the pianist stands up and looks in the score.*

Cellist: I'll try to count loud.

Pianist: You have a dialogue with me! *He sings.*

Cellist: Okay.

They play more slowly. While they are playing, the cellist beats the rhythm by indicating all the eight-notes. They think it was better, and play several times in order to secure it. […] At one point the cellist practices the rhythm by herself, beating all the eight-notes and playing her part.

Cellist: Now, we're together. And I solved the problem. I just have to remember that break [right before measure 77].

Reflexive deconstruction

The clarinetist is the one who identifies there is a musical problem: "It sounds so weird." She is starting to construct a Joint Problem Space, by assessing how she thinks they are playing, and how she thinks it is supposed to be. Then, the cellist seems to have a solution to the problem right away, but the clarinetist does not think the problem is solved yet. She insists on maintaining the JPS, but she is also expanding it by questioning her own opinion: "Now we're playing against each other again. Or is it supposed to be like this?" At this point, the pianist is also sharing what he sees in his full score, trying to clear up the misunderstandings.

According to the aural awareness definition, they are all very attentive to the problem, but they are not that attentive to the full score. They are sharing ideas from their mind's ears by explaining verbally how their own part sounds like, "I'm also on the beats," and by singing how their part sound like: "Aha, I'm playing ta-*ram*, ta-*ram* (*emphasizing ram*). But it is *ta*-ram, *ta*-ram (*emphasizing ta*)." Of available knowledge resources, they seem to be utilizing aural

discrimination skills, and the cellist seems to be utilizing practical knowledge resources (beating the rhythm and playing by herself).

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the clarinetist is the one who identifies a problem, and they all take part in solving it. They seem to be aurally aware, in terms of attentiveness, sharing of ideas from their mind's ears, and utilization of available knowledge resources.

In this episode the ensemble is using much of the time to construct and maintain a JPS; they ask several explanatory questions as part of their problem-solving. To consult their own and each other's parts can therefore be seen as a shared tool, because the score can mediate the musicians' understanding of the music. Another tool is the cellist's beating of the rhythm with her foot, which she uses when she plays with the others, and also when she practices by herself. By beating the eight-notes with her foot she is subdividing and making it easier to place the entrances.

In the focus group interview the pianist commented on this episode:

Pianist:	Excerpt 5, I don't remember what it was.
Clarinetist:	It is the excerpt in which the cellist and I never understand whether we are together or not.
Aslaug:	What were you thinking of?
Pianist:	I thought it was good, in a way, that we were working towards the right result by clarifying the content of each part. It's much easier if you are aware of what everybody is playing. (Interview B, p. 8, my translation).

What the pianist is emphasizing, here, is that they benefit from checking what the others are playing. My further interpretation of this comment, as the researcher, is that the score becomes a necessary starting point because they do not know what to listen for. When one does not know what to listen for, it is difficult to orient oneself in the music and within the ensemble playing. Hence, the pianist says that it is "much easier if you are aware of what everybody is playing."

6.4.2 Episode 3B: Skipping a rest—ending up ahead

In this episode the ensemble works on a rhythm in the fourth movement. The problem defined by the ensemble is the rhythm in the cellist's part, which is supposed to be together with the clarinetist's rhythm from measure 169 (fourth measure in figure 16). However, in the measure before, they are playing separate rhythms: the cellist is having even sixteenth-notes, while the clarinetist has a rhythmical figure including rests. The ensemble's goal is simultaneity; that is, the goal is to coordinate the performance. The actual problem occurs in measure 169, in which the cellist is skipping her sixteenth-note rest, and ends up ahead of the beat.

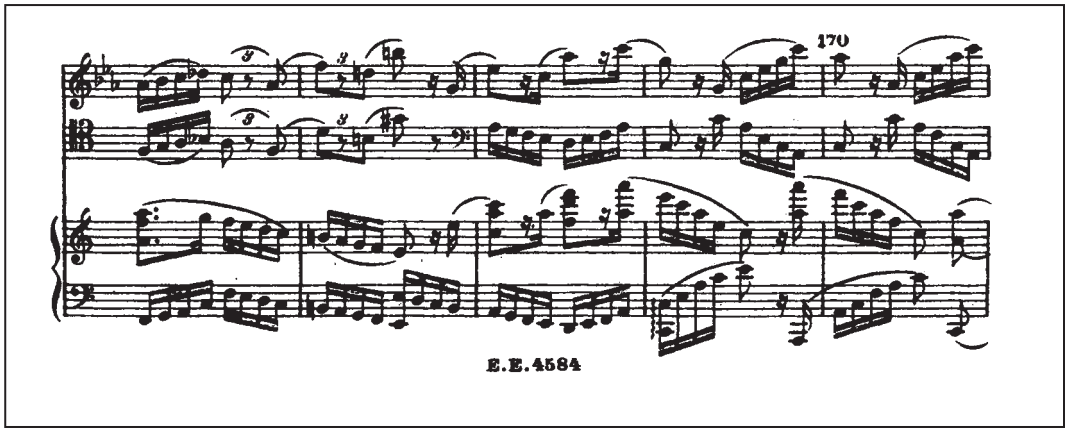

Figure 16: Measures 166–170 (Brahms, n.d., p. 35).

A Joint Problem Space is constructed around the coordination of the rhythm. Here are excerpts and summaries from the ensemble's negotiations:

Cellist:	There is one place I do not make a good entrance. Measure 168. *[…] They play a little more slowly.*
Clarinetist:	Was it working this time?
Cellist:	*Thinking*. Once again. *They play again.*
Clarinetist:	Should just you and the piano play? *Cellist and pianist play a few times, but do not solve the problem.*
Cellist:	Can we just play the sixteenth-notes in measure 168? *They play again, twice*. Yes, it's actually correct, even

though it sounds really weird. *They play once again.* No, it was actually not right.

Pianist: No, I guess it was not.

The cellist asks the clarinetist to count the pulse loud. They play again, twice, but cannot get it right.

Cellist: I don't understand anything. *Walks over to the pianist, and looks in the score.*

Clarinetist: How is the cellist's part right there?

The pianist plays the cellist's part from 168. Then, the clarinetist is also coming to the piano.

Clarinetist: This is just one long upbeat to the first beat in the next measure. *Sings.*

Cellist: That's what I also think, but it sounds all wrong. *The cellist sits down, while the clarinetist stays with the pianist.*

Clarinetist: Try again now.

They play, and they get it right. Then, they play several times, in order to secure it.

Reflexive deconstruction

The cellist is the one identifying she has a musical problem, and then starts constructing a Joint Problem Space, by saying she is not making a good entrance in measure 168. At this place in the movement they are all playing *forte*, so it is difficult to hear what everyone is playing. I would therefore say this JPS is not fully constructed until the clarinetist and pianist actually understand what the cellist is trying to improve, which is when they all go to the piano and look in the full score.

According to my aural awareness definition, they are all attentive to the problem and each other, and they are also attentive to the score. The clarinetist is sharing an idea from her mind's ear when she says: "This is just one long upbeat to the first beat in the next measure," and the cellist confirms that she thinks she is still playing wrong when she says: "but it sounds all wrong." Along

the way, they are mainly utilizing their aural skills as knowledge resources, and the pianist also utilizes his sight reading skills when he plays the cellist's part.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the cellist identifies a problem she is having, and they all participate in solving it. They seem to be aurally aware in terms of attentiveness, sharing of ideas from their mind's ears, and utilization of knowledge resources.

Three tools are shared in this episode: (i) the clarinetist counting the pulse out loud, (ii) consulting the pianist's full score, and (iii) the pianist playing the cellist's part. The first tool, the clarinetist counting the pulse, is suggested by the cellist. Even though the tool did not directly solve the problem, the idea was for the cellist to have someone indicating the beats, so that she could concentrate on placing her sixteenth-notes in relation to the pulse. Consulting the pianist's full score, helped the ensemble see how the cellist's part related to the other parts. It also made the clarinetist and the pianist look more closely at what the cellist had, and the clarinetist helped her with the following comment: "This is just one long upbeat to the first beat in the next measure." Also, this tool contributed to the sharing of the third tool, which was having the pianist play the cellist's part. The cellist does not say explicitly which of the three tools helped her the most in her effort to improve her playing, but the second and the third tool might have had a particular impact on how she heard the difficult rhythm in her mind's ear, because right after this, she played correctly.

In the focus group interview the clarinetist comments on this episode:

Clarinetist:	[…] Afterwards, I thought, of course, we are having the same, I just didn't notice while you were working on it. Perhaps if one takes a little more time, and just looks […] Okay, now I'm just going to analyze this quickly, instead of playing it over and over again, trying, and then it's not working. So one should just stop and take time to listen […]
Aslaug:	So, if one takes a little more time, you could have found a way out of it by looking at what the score said?
Clarinetist:	Yes, not playing at all.

Aslaug: Heard it in your mind's ear, how it should sound, how the gesture should be?

Clarinetist: Absolutely. (Interview B, p. 4–5, my translation).

First, it is interesting to note that the clarinetist discovered afterwards, that she was playing the same rhythm as the cellist had a problem with, only with a slur. It seems as if she thinks this discovery is connected to something she finds characteristic about their ensemble: that more often they should "just stop and take time to listen." From a researcher's point of view I would say this is close to the conclusion I suggested in episode 3A, that it is important to know what to listen for, because if one does not know what to listen for, it is difficult to orient oneself in the music and within the ensemble playing. What the clarinetist is also suggesting is that not all problem-solving has to include playing. According to her, they could have heard it in their mind's ear, not playing at all.

6.5 Shared tools

In the second research question of this project, I ask what kinds of tools are shared in order to improve the ensembles' playing, and how. The analyses of the in-depth episodes above show that different kinds of tools were shared during the clarinet trio's rehearsals. I will now summarize and categorize these tools as findings, and also extract how these contributed to the ensemble's collaborative efforts to improve their playing. It is important to note that in order to be a shared tool as described in chapter 3, one or more knowledge resource must be *in use* within the ensemble, and be accepted. This means that knowledge resources that are accepted into a Joint Problem Space can become shared tools, and that other knowledge resources remain available in the collective reservoir. The question is therefore *what kinds* of tools were shared, and *how* they were shared.

In episode 1A (Entering without the count of one), two tools were shared: (i) comments about making no *ritardando,* and (ii) the agreement that they need to play straight. These appeared as *conceptual tools* because they helped the ensemble define a shared conceptual space and negotiate the ideal interpretations they heard in their mind's ears. Still, I would say the negotiations contributed more to constructing the JPS, than to solving the problem.

In episode 1B (Chords as backcloth for the piano solo), four tools were shared: (i) the comment asking the pianist to shine more when he is playing the theme, which appeared as an *interpretative tool*, mediating the pianist's understanding of balance and how he might play the theme, (ii) the comment about the piano playing the melody and the others having an accompanimental role, which appeared to be an *analytical tool*, mediating the whole ensemble's understanding of how the musical roles are divided, (iii) the statement of the dynamics in their parts, which also appeared as an *analytical tool*, underlining their accompanimental role, and (iv) the suggestion that they think of the chords, which appeared as an *analytical tool*, mediating their understanding of the underlying harmonics, which helps them choose their phrasing.

In episode 2A (The world's longest line), four tools were shared in the ensemble: (i) the clarinetist singing and conducting, emphasizing each beat and (ii) the cellist singing, emphasizing the half note in measure 3, both appearing as *performing tools*, mediating interpretative understandings, iii) the clarinetist describing the music in metaphors, which appeared as an *interpretative tool*, mediating the clarinetist's ideas about how she pictured the melody in metaphors; it may also have mediated the other ensemble members' understanding of the opening melody, and (iv) the clarinetist explaining how long her phrase is, which appeared as an *analytical tool*, mediating the ensemble's understanding of the interpretation.

In episode 2B (Rhythmic displacement), two tools were shared in the cellist's Problem Space: (i) metaphors describing the cellist's interpretation, which appeared as an *interpretative tool* and ii) the cellist singing how she believes the music should be phrased, appearing as a *performing tool*. Both tools mediated the other ensemble members' understanding of how the cellist interpreted the music. Three tools were shared in the Problem Space constructed by the clarinetist: (i) the clarinetist using her aural skills in order to assess whether the cellist's phrase finishes after hers, appearing as an *analytical tool*, (ii) the clarinetist consulting the cellist's part, appearing as an *analytical tool*, used to compare the performance with the score, and (iii) the clarinetist singing her part, appearing as a *performing tool*, used to explain how her part sounded alone.

In episode 2C (It will probably be all right), no tools were shared.

In episode 3A (Playing separately and together), two tools were shared: (i) consulting their own and each other's parts, which appeared as an *analytical tool*,

because the score mediated the musicians' understanding of the music, and ii) the cellist's beating of the rhythm with her foot, which she used when she played with the others, and also when she practiced by herself. This appeared as an *activity tool*; by beating the eight-notes with her foot she was subdividing, and this made it easier to place the entrances.

In episode 3B (Skipping a rest—ending up ahead), three tools were shared: (i) the clarinetist counting the pulse out loud, (ii) consulting the pianist's full score, and (iii) the pianist playing the cellist's part. The first tool, the clarinetist counting the pulse, appeared as an *activity tool*. Even though the tool did not directly solve the problem, the idea was to give the cellist an indication of the beats, so that she could concentrate on placing her sixteenth-notes in relation to the pulse. The second tool, consulting the pianist's full score, appeared as an *analytical tool*, and helped the ensemble see how the cellist's part related to the others. It also made the clarinetist and the pianist look more closely at the cellist's part, and the clarinetist helped her with the following comment: "This is just one long upbeat to the first beat in the next measure." This tool also contributed to the sharing of the third tool, which was the pianist playing the cellist's part. This appeared as *performing tool.* The cellist does not explicitly say which of the three tools helped her the most in her effort to improve her playing, but the second and the third tool might have had a particular impact on how she heard the difficult rhythm in her mind's ear, because right after this, she played correctly.

6.6 The rehearsal process and aural awareness

The comprehensive research problem, asking in what ways the students are aurally aware during their ensemble rehearsals, can be discussed from several viewpoints. One is the way the ensembles' aural awareness manifests itself during the course of their rehearsals—taking into consideration both collective and individual perspectives, as well as the time in between the ensemble rehearsals. Therefore, I turn now to data from the focus group interview only, in order to shed light on the ensemble's thoughts on the rehearsal process and aural awareness. The topics that are touched upon are aural awareness in different stages of the rehearsal process and the relation between individual and collective aural awareness in connection with rehearsing; I also offer some thoughts about how the ensembles believe their preparation could be improved.

During the focus group interview, I asked the ensemble whether they were aurally aware in different ways in the early and the late stages of a rehearsal process. I got different answers from the different ensemble members, but they all agreed that their aural awareness changed during different stages. The cellist, for example, suggested that one looks at aural awareness in ensemble rehearsals as an hourglass:

> Cellist: We are perhaps thinking more of the entirety […] when a concert is getting closer. And we try to loosen the concrete aural awareness in a way […] In the starting phase one is working to get it together, and then one moves on and works in more depth. But after a while, one needs to get out again. So, I think one works as an hourglass.
>
> Aslaug: Where is the concrete aural awareness in this hourglass?
>
> Cellist: It's in the middle. And that's when one is working on the details […], then one is ready for that, then one has rehearsed it enough, then one knows the technique […]. But after a while when the concert is coming up, one needs to prepare the whole piece for performance, so then one has to think about the whole again. […]. (Interview B, p. 14, my translation).

The cellist is describing how she thinks they are being aurally aware in quite different ways during the rehearsal process, and she is using the metaphor of an hourglass in order to explain. An hourglass is wide on the top, narrow in the middle, and wide again in the bottom. As I understand the cellist, she is saying that in early phases of the rehearsal process their aural awareness is 'wide' as the top of an hourglass and it is directed towards the entirety of the piece. In the middle of their rehearsal process, their aural awareness is directed to details, as in the narrow funnel of an hourglass. In the late stages of a rehearsal process, they are again directing their aural awareness to the entirety of the piece. The pianist had this answer to the same question:

> Pianist: It's kind of the same, actually [as the cellist said]. The inner ear needs to have an idea before one starts to play. And later, when one starts to play, one needs to learn to read the music first. […] It's difficult to

have ideas when one does not know the music. When one knows the music, then one can start working on those ideas. (Interview B, p. 14, my translation).

Here, I understand the pianist to be emphasizing how the mind's ear plays an important role when it comes to having ideas about how to play the music. However, on the one hand, he says that it is important to have ideas in the mind's ear prior to learning the music, and on the other hand, he says it is difficult to have ideas before one knows the music. In any case, he describes aspects of the mind's ear that he regards as important in the process of learning and playing a piece of music.

The clarinetist has a third approach to the question of aural awareness in the different stages of a rehearsal process. She uses the cellist's metaphor of an hourglass and says:

Clarinetist: It depends on where one is in the process, both as an ensemble and as a chamber musician […] if one has done it as many times as many teachers here [at NAM] has, they do not have to go through a process the same way as we have to do. They [….] know it so well, so perhaps they go directly there (*draws the bottom of the hourglass*). They probably have to do a little of this (*draws the middle of the hourglass*), but they have probably played everything before, so they save some time. (Interview B, p. 15, my translation).

The clarinetist is comparing the rehearsal process they have as undergraduate music students, to how she believes professional musicians rehearse in ensembles. She is suggesting that professional musicians are aurally aware in a different way than students, because they are more experienced and can listen to the entirety of the piece much sooner than they can, as students.

In the focus group interview we also talked about how they are aurally aware when they are practicing alone, preparing for the ensemble rehearsals. Two answers concerned listening to recordings, with some reflections about how recordings actually could, and should, contribute to their practicing. The cellist answered that she sometimes rehearses a lot with recordings in the background, but that she does not want to become too dependent on these. The clarinetist said she listens to recordings, and that a problem with this is that she stops relating to the written music: she simply plays the music the way she has

heard it on the recordings. She emphasizes, though, that this is a way of being aurally aware. The pianist said he often sings the other parts while playing his own part. All of them are thus using or creating an additional sound source, to which they can listen, in order to get to know the piece well.

As regards being aurally aware in the collective rehearsal, the cellist was particularly concerned about how difficult it is to perform and listen at the same time. She said:

> Cellist: I notice […] that when I listen to those two [clarinetist and pianist], I can listen for […] how it's working, and how they are influencing each other. But when I'm a part of it, I think from my point of view. And it's so easy to think from one's own point of view, but when one listens without playing, one merely becomes a listener, just listening. […]. How one can train and listen to the others at the same time as playing oneself, […] I don't get that. No matter how much I practice I can't hear myself as an objective listener sitting over there, and myself practicing here, I cannot do that. (Interview, p. 24–5, my translation).

What the cellist is pointing out is how difficult it is to be a performer and a listener at the same time. This issue is something I addressed in the very first sentences of this thesis, and I consider to be one of the most important questions when it comes to aural awareness in ensemble rehearsals: listening—both to oneself and to others—while playing, is a necessary ingredient in making adequate assessments, constructing, and maintaining Joint Problem Spaces, and sharing tools that may improve the playing. But how does one learn to do this?

Throughout the focus group interview the ensemble emphasized that they think that watching the video excerpts of their rehearsals, and participating in the focus group interview, have given them ideas about how they might improve the ways in which they prepare for their ensemble rehearsals. The cellist proposed that each ensemble member should ideally go over the score and look at which functions one has in different chords before the rehearsals, and that many problems could be solved before they met. The pianist, on the other hand, proposed that they look more closely at the score together, in the rehearsals, and that they discuss division of musical roles and so on. He thinks they are not always reaching very concrete solutions. The clarinetist supported the need for better

preparation, by saying she was surprised to notice, in the video excerpts, how many times she believed she could have checked something out in advance. I will return to some of these issues in chapter 9 and 10.

6.7 Summary

The empirical data from video observations and the focus group interview with the clarinet trio has been thoroughly analyzed and is presented in this chapter primarily through reflexive deconstructions and reconstructions of selected in-depth episodes. These descriptions then formed the basis for a further discussion of the findings in relation to the research questions and the comprehensive research problem.

As a preparation for the cross-case discussions in chapter 8 and 9, the shared tools found in the in-depth episodes were identified in 6.5. In sum, I found that the the problem-solving processes comprised five different kinds of tools: (i) conceptual tools, (ii) interpretative tools, (iii) analytical tools, (iv) activity tools, and (v) performing tools. I will return to these in chapter 8, where they will be discussed in relation to the tools shared by the other ensembles.

Finally, in order to prepare for the reflexive level of "critical interpretation" (Alvesson & Sköldberg, 2009) in chapters 9 and 10, I identified some aspects in 6.6 that were particularly salient in the focus group interview: aural awareness in different stages of the rehearsal process and the relation between individual and collective aural awareness in connection with rehearsing, as well as some thoughts about how the ensemble's preparation could be improved.

7 Case C: The piano trio

This chapter is a within-case display of "the piano trio." It describes and explains characteristics of this particular case, according to the theoretical and analytical principles summarized in the *Introduction to Part II*.

7.1 The ensemble and their repertory

The piano trio ensemble consisted of fourth year performance students: a pianist, a violinist, and a cellist, all female. When I observed this ensemble they rehearsed *Piano Trio No. 4 in E Minor*, op. 90, by Antonin Dvořák (1841–1904). A brief description of this work will give the reader an introductory impression of the music the ensemble was rehearsing.

The Trio was composed in 1890–91, and has the nickname "*Dumky* trio." Keller (2011) explains that *dumky* is the Czech plural of *dumka*, which is a diminutive form of the word *duma*. Initially, the Ukrainian *duma* seems to have been a kind of epic song, a psalm or lament of captive people. Within nineteenth-century compositions, the *duma* (or *dumka*) took on a particular quality, becoming, as Keller puts it, "a work of ruminative character but with cheerful sections interspersed along the way" (Keller, 2011, p. 177). Dvořák's piano trio in E minor is a collection of six *dumky*, a departure from the conventional four-movement form he uses in other chamber music (Keller, 2011, p. 178; Ulrich, 1966, p. 336). However, the first three of these are played *attacca*, and are harmonically related (E minor, C-sharp minor and A, respectively), which makes them sound as one coherent movement. Combined with the more independent fourth, fifth

and sixth *dumky*'s the overall impression, for the listener, is of a four-movement form. During the video observations the ensemble rehearsed all six *dumky*:

1 *Lento Maestoso (E minor)*
2 *Poco Adagio (C-sharp minor)*
3 *Andante (A major)*
4 *Andante Moderato (D minor)*
5 *Allegro (E-flat major)*
6 *Lento Maestoso (C minor)*

An in-depth description of each *dumka* is beyond the scope of this thesis; but this summary by Keller (2011) will give the reader a good idea:

> The first is heady and impassioned, with fast and slow sections alternating; the second […] is downright funereal, with a cello lament intensified by the violinist's muted whispers […] the third, its theme announced by single notes in the piano, simple and plaintive. […]. The fourth *dumka* represents the trio's second stand-alone movement—again, a doleful melody, initially given to the cello, alternating with brighter sections. In the fifth *dumka* […] he begins with a skittish fast tempo that should strictly be attached to an interlude, and reserves the slow section for contrast in the middle […]. The finale opens with a stentorian *Lento maestoso* introduction, and after considerable development and alternation […], the trio ends […] in the major mode (Keller, 2011, pp. 178-179).

Table 11 gives an overview of which *dumky* the ensemble played during the observed rehearsals, and when the focus group interview took place.

Rehearsal 1 October	**Rehearsal 2** November	**Rehearsal 3** November	**Rehearsal 4** November	**Focus group interview** December
1st *dumka*.	1st and 2nd *dumka*.	All *dumky*[a].	1st–5th *dumka*.	

Table 11: Overview of observed rehearsals and the focus group interview, the piano trio.

a Due to technical problems with the recording equipment only the first and second dumky, and parts of the third were video recorded. However, I remained for the whole rehearsal and listened *to dumky four, five, and six.*

7.2 First rehearsal

The repertory of the first rehearsal was the first *dumka* of Dvořák's Trio. I begin with a look at the kinds of musical problems the students faced and chose to work on.

The analysis of the first rehearsals shows that the ensemble primarily described problem states in relation to entrances (4), transitions (3), tempo (3), and energetics (3), but also in relation to articulation (2), intonation (2), and rhythms (2). Dynamics, balance, pulse, and timbre were each addressed once. Their goals seemed to be either (a): to improve their ensemble playing (simultaneity/coordination), (b): to improve their ensemble playing, *and* to improve their understanding of the musical score or the composer's intentions (interpretation of notation/character), or (c): to improve interpretation alone. Altogether, eight episodes had simultaneity as a goal, five had a goal of both simultaneity and interpretation, and five had a goal of interpretation.

Among the episodes of the first rehearsal, I will examine three in depth, because they exemplify very different forms of negotiations, which shows that the ensemble is aurally aware in different ways, and that the tools that are shared are quite different. These episodes have been given a 'serial number' and a title, as shown table 12.

	Title of the episode	**Problem states and goals**
Episode 1A	"Imaginary triplet"	Entrance, rhythm *Simultaneity*
Episode 1B	"Intonation of the violinist's A-sharp"	Intonation *Simultaneity*
Episode 1C	"Sixteenth-note triplets dialogue"	Entrance, rhythm *Simultaneity*

Table 12: Overview of in-depth episodes, first rehearsal, the piano trio.

Episode 1A was included in the video excerpts the participants saw before the focus group interview. However, the ensemble did not comment on the episode, and thus the analysis is based on the video observations only.

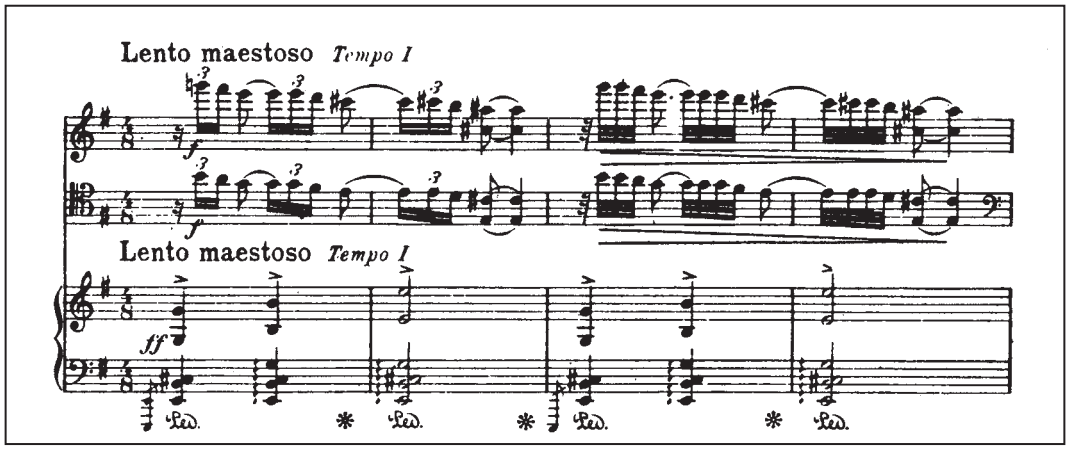

Figure 17: Measures 73–76 (Dvořák, 1973, p. 4).

7.2.1 Episode 1A: Imaginary triplet

In this episode, the ensemble works on an entrance in the first *dumka*. The problem state defined by the ensemble is a rhythmic difficulty in measures 73–76 (see figure 17), and the goal is simultaneity. In the previous measures there has been a *ritardando* consisting of several unison Es. The theme is the same as the opening measures of the piece, but the distribution of musical roles is changed, so that the strings play the melody that the piano had at the beginning.

A Joint Problem Space is constructed around problems with the violinist's and cellist's common entrances problems, both in the first and third measure of the musical excerpt. Here are excerpts and summaries from the ensemble's negotiations:

Pianist: I feel that you (*directed to the string players*) can be a little more on to those [triplets], because now you sort of enter after. *She sings the melody and claps the beats*. But I feel you are maybe waiting too long. *The cellist nods.*

Violinist: Yes, we are waiting too long; we are waiting for the first beat.

The pianist imitates how they played by singing and clapping again. […] The cellist is lost in her own thought, clapping the pulse on her lap. The pianist sings the melody while clapping the pulse. […]

Violinist: We don't actually have to think about that grace note [in the piano part […]

Cellist: Can you (*directed to the pianist*) just play the first beat? *The pianist plays the first beat including the grace note.* So you have a grace note also the first time?

The pianist continues playing her part, while she sings the theme from the violin part. […] Then, they play, but soon break it off. By themselves, the pianist is clapping the pulse, the cellist is clapping the pulse on her lap and sings, and the violinist is playing.

Pianist: I think you can start even earlier, because it is a triplet you are about to play (*she sings*). *Everybody is humming triplet subdivisions.*

Violinist: It is almost as if your (directed to the pianist) *acciaccatura* becomes a part of the "previous" triplet.

Pianist: Yes, you can think like that […] *She sings it. […] They play again.* This was much better than the first time we did it. But it seems like you (*directed to the violinist*) get confused when it changes to 32nd-notes?

Violinist: I'm just playing it wrong. […]

Cellist: To me it is helpful trying to think like… if we didn't have that rest it would have been [like this]. *She sings with triplet-subdivision and then changes to 32nd-note subdivision.* […]

Violinist: Yes, that we are thinking subdivisions. […]

Pianist: When you (*directed to the string players*) are finished with that triplet (*she sings and plays*), and when you are here (*she plays the longest note in measure 74*), perhaps you could start thinking ahead, and then you've sort of got in your mind.

The others are nodding. […] They play again.

Reflexive deconstruction

The pianist is the one who identifies that there is a musical problem, and she addresses it by stating that she thinks the string players are waiting too long before they enter. Hence, she is the one who starts to construct a Joint Problem Space, and it is soon co-constructed by the violinist, who agrees they are waiting too long for the first beat.

According to the aural awareness definition, the pianist is particularly attentive to relations between their musical performance and the score, when she perceives a mismatch between how long the string players are waiting and what the rest in the score indicates. She is also attentive to the performance of the third measure, when she later asks the violinist if she gets confused when it changes from triplets to 32nd-notes. The violinist and cellist are primarily attentive to the problem-solving as such.

The ensemble members share ideas from their mind's ears during the episode by assessing what is played—"It is almost as if your grace note becomes a part of the 'previous' triplet" (violinist)—or by sharing how their interpretation of the score connects with how they can rehearse it: "if we didn't have that rest it would have been [like this]. *She sings with triplet-subdivision and then changes to 32nd-note subdivision*" (cellist).

During the episode, the ensemble is utilizing theoretical knowledge resources, such as the professional term "subdivision." They also utilize practical knowledge resources, such as the mental preparation of an imaginary triplet. The ensemble takes several time-outs, in which they sing, clap, or play individually. In these time-outs, they wear a focused expression, and one can assume by their physical and musical gestures that they are imagining the music, and thereby are reflecting on how to solve the problem.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the ensemble identifies and negotiates a musical problem they encounter, and they manage to construct and maintain a Joint Problem Space. They show aural awareness by their attentiveness to the performance and each other, they are sharing ideas from their mind's ears, and they are utilizing available knowledge resources.

The most prominent tool shared in episode 1A is the ensemble's use of the concept of "subdivision," in which they draw on theoretical and practical

knowledge resources. Using their theoretical knowledge, the ensemble reasons out that the duration of the pianist's grace note can be compared to the duration of one third of a triplet. With help of practical knowledge, they invent an imaginary triplet in the previous measure, because they assume this will guide their inner ears in placing the entrance in the measure that follows. When they once again experience that the string players are late on their entrance, they use the concept of subdivision as a tool again. Using her theoretical knowledge, the cellist conceptualizes the underlying subdivisions in the four measures (triplets in the first two and 32nd-notes in the last two). Using her practical knowledge, she suggests they think as if the rest in measure three was replaced by an actual note, and also points out that the last note in the previous measure can be used for preparing this new subdivision. Again, they invent notes that are not in the score, in order to guide their mind's ears as they play.

Furthermore, in this episode the ensemble shows an extensive use of singing and clapping, often in a combination in which the clapping represents the pulse and the singing represents the melody. Indeed, their clapping and singing in this episode is so intertwined with the verbal comments, and hence so integrated in the negotiations, that they are shared tools. As tools the singing and clapping serve two purposes: to help with the reflection within the individual time-outs mentioned above, and to help each demonstrate her own thoughts musically to the others. Both are expressions of practical knowledge resources.

7.2.2 Episode 1B: Intonation of the violinist's A-sharp

In this episode, the ensemble works on the intonation of the violinist's A-sharp in measure 76 of the first *dumka* (last measure in figure 17). The goal is simultaneity, in the meaning of coordinated intonation. In this measure, both the violinist and cellist play double-stops, and the A-sharp that the violinist refers to is the top note in her part.

The problem does not seem to be clear to the group at the beginning of the negotiations, although it seems clear to the violinist who rises to speak. The violinist starts asking the cellists questions about what notes she is playing. They are thus not collaborating on defining a Joint Problem Space, even though the problem might be regarded as a joint problem, because one musician's intonation affects the whole ensemble. Here are excerpts and summaries from the ensemble's negotiations:

Violinist:	You (*directed to the cellist*) also have an A-sharp on the last long notes, right? *She plays the whole measure, while the cellist plinks her strings.*
Cellist:	A-sharp?
Violinist:	What have you got there?
Cellist:	I've got *(plays her part).*
Violinist:	Or have you got C-sharp? *(says it while the cellist plays*). What are you playing?
Cellist:	C-sharp and E. *The pianist also plays these two notes on the piano.*
Violinist:	C-sharp and E…okay, then I'll listen to that one *(they both play, and the pianist also plays what they have).* Just have to know what to tune from, because otherwise I am always higher in pitch than you *(plays her part again)*.

Reflexive deconstruction

The violinist identifies a problem connected to the intonation of her A-sharp, which is the top note of her double-stops, by asking: "You (*directed to the cellist*) also have an A-sharp on the last long notes, right?" She seems to experience not being in tune with the cellist. Hence, the violinist is trying to construct a JPS, but the cellist and pianist do not actively participate in co-constructing it.

According to the aural awareness definition, the violinist is attentive towards the musical performance. However, she does not share with the others what she hears in her mind's ear, and it is not made clear in their negotiations. One can assume that when the violinist is playing her part again after knowing what notes the cellist is playing, she might imagine the note she says she will listen to. However, which note is not explicitly mentioned in the negotiations. It could be the C-sharp they have in common, or it could be the E that the cellist has alone.

Two comments from the violinist indicate that she utilizes practical knowledge resources. First, on the basis of aural discrimination skills she identifies that something is out of tune, and second, it seems that knowing which notes the cellist has is useful to her: "Just have to know what to tune from, because otherwise I am always higher in pitch than you." By saying this, she gives the

impression of knowing how to change the intonation in the light of new information. The latter kind could also be utilization of acquaintance knowledge, related to experiences about intonation issues with one's own instrument.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the violinist in the ensemble identifies a musical problem and tries to construct a JPS. The violinist is partly aurally aware. She is attentive, but does not share ideas from her mind's ear. However, she seems to utilize some available knowledge resources. Because it is the violinist who takes the lead, it is she, and not the whole ensemble, who is aurally aware according to the definition.

Few tools are shared in this episode, and it is not clear whether the problem gets solved. The violinist seems to be satisfied with getting the information about which notes the cellist is playing, but her reflections about how it might solve the problem are not clear: "okay, then I'll listen to that one." Neither are there any verbal comments within the ensemble assessing whether the intonation was improved. What *can* be labeled as a tool in this episode is the information the violinist receives from the cellist, that she plays "C-sharp and E," because this seems to help the violinist in solving the problem.

7.2.3 Episode 1C: Sixteenth-note triplets dialogue

This episode is a direct continuation of episode 1B. The ensemble works on an entrance, and the problem state they have defined is a rhythmic difficulty in measure 79 of the first *dumka* (third measure in figure 18). The goal is simultaneity between the rhythms of the cello and the piano.

A Joint Problem Space is constructed around problems with the cellist's triplets, which should be in 'dialogue' with the pianist's triplets, each taking their turn; however, the cellist is starting her triplets too early. Here are excerpts and summaries from the ensemble's negotiations:

Pianist:	I've got triplets, sixteenth-note triplets. So it has to be *(plays her part while singing the cellist's part*).
Cellist:	Oh, so it's *(she sings her part while tapping the pulse on her cello. The pianist is also singing along*).

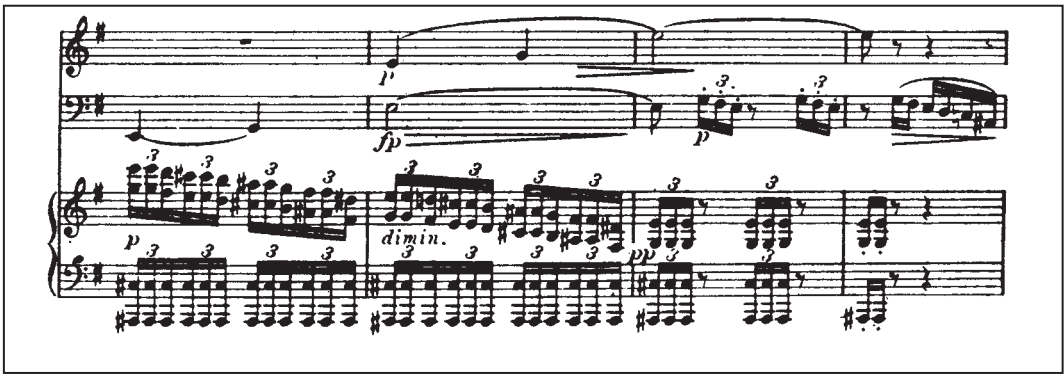

Figure 18: Measures 77–80 (Dvořák, 1973, p. 4).

Pianist: Right, once more? Or should we read the rhythm like we did [once before]?

The cellist is in her own world, tapping the pulse with the bow on her lap.

Cellist: Okay, I've got it now. […] I was counting the wrong way. […]

They play from measure 77, but break it off after the cellist's entrance.

Pianist: No, you (*directed to the cellist*) are a bit early. First you've got a measure with an E (she plays her part, while counting out loud the cellist's measure). One, two, three, four, and then… When they arrive at measure 79 the pianist plays her sixteenth-note triplets, and the cellist tries to join in, but the pianist also sings the cellist's triplets "correctly."

Cellist: Can we just play that measure? [measure 79] […]

They play again, and now the cellist gets the entrance right.

Reflexive deconstruction

The pianist is the one who identifies that there is a musical problem in measure 79, by saying and playing: "I've got triplets, sixteenth-note triplets. So it has to be *(plays her part while singing the cellist's part).*" Hence, the pianist is starting to construct a Joint Problem Space, and the cellist is co-constructing it by confirming the defined problem. Then, the pianist continues to construct the JPS, by

assessing directly the cellist's playing: "No, you (*directed to the cellist*) are a bit early." Once the JPS is constructed, the cellist takes full part in maintaining it.

According to the aural awareness definition, the pianist is particularly attentive, because she expects the music to be played as in the score, and can compare how her rhythm relates to the cellist's rhythm. Because the pianist knows what to listen for, she notices that she thinks the cellist plays the wrong rhythm. The cellist, on the other hand, is both attentive to the pianist and what she has to say, and attentive to the problem as such.

The pianist shares ideas from her mind's ear in two ways. She assesses their playing and gives a verbal comment about it: "No, you are a bit early," and she explains how she thinks the rhythms should sound by playing, singing, and counting. The cellist also seems to have an idea of the rhythm in her mind's ear, but she is only sharing parts of it by tapping the pulse either on her cello or on her lap.

It is difficult to say what kinds of available knowledge resources they are utilizing. The pianist may use theoretical (reading the note lengths) and/or practical or acquaintance knowledge (using her sense of pulse) in order to know how the rhythm "should be." The cellist seems to use mostly practical knowledge (tapping the pulse) as she tries to place the rhythm correctly in the measure by singing or imagining it.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the pianist in the ensemble identifies a musical problem, and her construction of a Joint Problem Space states the current problem to be that the cellist enters too late. They are both attentive, but only the pianist explicitly shares what she hears in her mind's ear. They are therefore aurally aware in an individual way, and not *collaboratively* aurally aware. This also makes their negotiations a bit unbalanced: the pianist starts to construct the problem alone, and she is also the one suggesting many problem-solving actions. But once the JPS is constructed, the cellist participates in maintaining it. Some available knowledge resources are utilized. However, none of these become the most important tool for solving the problem.

It is the final suggestion coming from the cellist, "Can we just play *that* measure?," that seems to solve the problem. This is also the most prominent tool shared in this episode: that the cellist wants to start right on the "difficult

measure" (measure 80), while the pianist has suggested that they play the problem in context, starting in the measure before the problem. When they played the way the pianist suggested, the slur extending the cellist's E over the bar-line, made it difficult to place the triplet; the cellist therefore made the first eight-note in measure 79 too short (as a sixteenth-note), the rhythm shifted "to the left" and the triplet came too early. By "isolating" the measure and starting directly in measure 80, the cellist got an idea of how the sixteenth-note triplets were in a dialogue. Managing that also made it easier to play in context. Singing, playing, counting, and tapping can also be seen as tools in this episode, because they might have contributed to solve the problem along the way.

7.3 Second rehearsal

The repertory of the second rehearsal was the first and second *dumka*. I begin with a look at the kinds of musical problems the students faced and chose to work on.

The analysis of the second rehearsal shows that the ensemble primarily described problem states in relation to tempo (4) and energetics (3), but also in relation to rhythms (2), dynamics (2), vibrato (2), and timbre (2). Articulation, entrances, intonation, phrasing, string choice, pulse, and transitions were each addressed once. The ensemble's goals seemed to be either simultaneity, a combination of simultaneity and interpretation, or interpretation. Altogether, five episodes had simultaneity as a goal, six episodes had a goal of both simultaneity and interpretation, and one episode had a goal of interpretation.

Among the episodes of the second rehearsal I will describe two in depth, because they exemplify how collaborative efforts to improve an ensemble's playing might result in very different problem-solving processes. These two episodes have been given a 'serial number' and a title, as shown in table 13.

	Title of the episode	**Problem states and goals**
Episode 2A	"It's easier to tune alone!"	Intonation *Simultaneity*
Episode 2B	"Rhythm session by the piano"	Rhythm *Simultaneity*

Table 13: Overview of in-depth episodes, second rehearsal, the piano trio.

Episode 2A and 2B were included in the video excerpts the participants saw before the focus group interview, and I have included excerpts from the interview in these analyses.

7.3.1 Episode 2A: It's easier to tune alone!

In this episode, the ensemble works on intonation in measure 126 of the second *dumka* (fourth measure in figure 19). Their goal is simultaneity; that is, the coordination of the intonation. The violinist is playing double-stops in thirds, and the cellist is playing mainly a C-sharp, changing to an E in measure 126.

A Joint Problem Space is constructed around the intonation problems. Here are excerpts and summaries from the ensemble's negotiations:

Cellist: […] we should work on the intonation […] (*the violinist plinks her strings*).

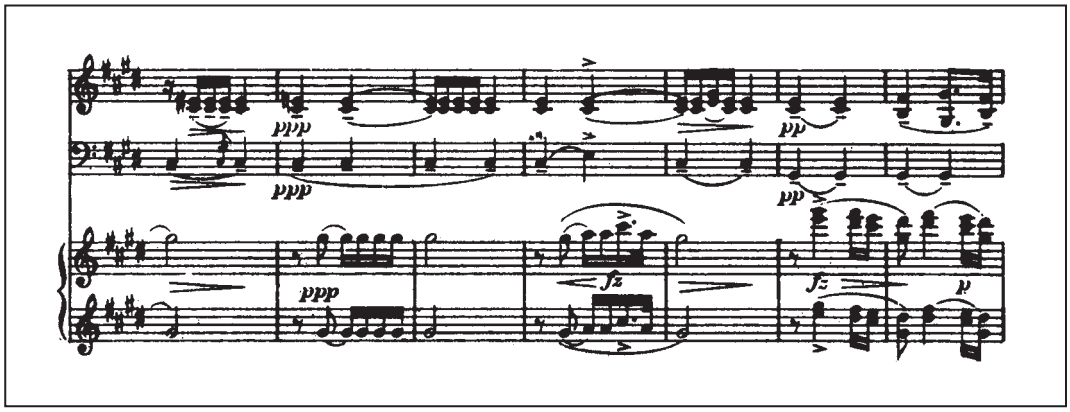

Figure 19: Measures 123–129 (Dvořák, 1973, p. 13).

Pianist: Yes. Right.

Violinist: I play really out of tune […]

Cellist: Yes… (*laughter*) […]

Violinist: Such things are much easier to play alone, rather than having others to respond to. *The strings practice a little, separately.*

Cellist: Perhaps we should practice this alone, and move forward

Violinist: But I'd like to know exactly what to listen for, and when (*the cellist agrees*). And what note I should use as a starting point, if I should use my high note or my low note as a starting point. Most of the time you also have that C-sharp (*plays, directed to the cellist*).

The cellist agrees. The pianist plays the same chord. […] They play from measure 126 again.

Violinist: In 128, I still hold that C-sharp. So then you have to listen to me. I just hold it like this (*plays*). So it stays. You change your note there?

Cellist: Yes. I would have to adjust to yours?

Violinist: Yes.

Cellist: As long as you play in tune… (*plays*)

Violinist: Yes, but I play the same note all the time (*plays*)

[…] *Only the strings play from 126, chord by chord.*

Pianist: And if it is to be with the piano, then it needs to be a little higher (*plays*). […]

Violinist: We have to listen to you too there (*directed to the pianist*). Because you can't adjust. *The pianist plays the first chord.* […]

Violinist: It's difficult to listen to you both (*directed to both the pianist and the cellist*). *The strings play again. […] When they stop, the pianist plays the last chord on the piano. This is noticeable tuned higher than the strings' tones.*

Cellist: Oops!

Pianist: You are maybe a little low […]

Then they remember they have not tuned their instruments this rehearsal, and do that. They play again.

Reflexive deconstruction

The cellist is the one who identifies a musical problem, and she starts to construct a Joint Problem Space, by saying: "we should work on the intonation." The pianist co-constructs this JPS by agreeing right away. The violinist is also co-constructing, by assessing her own playing, "I play really out of tune," which confirms that she agrees to the cellist's suggestion. The violinist shares how she feels about the intonation problem: "Such things are much easier to play alone, rather than having others to respond to." And she then expands the whole ensemble's understanding of their JPS by saying: "But I'd like to know exactly what to listen for, and when (*the cellist agrees*). And what note I should use as a starting point, if I should use my high note or my low note as a starting point."

According to the aural awareness definition, they are all attentive to their performance, but each ensemble member seems to be mostly attentive to her own intonation: "In 128, I still hold that C-sharp. So then you have to listen to me" (violinist), "And if it is to be with the piano, then it needs to be a little higher" (pianist). The latter comment from the pianist is an example of an idea she shared from her mind's ear. In addition, the violinist is sharing from her mind's ear that "It's difficult to listen to you both" and in the end, the pianist says to the strings: "You are maybe a little low." The available knowledge resources they are utilizing seem to be practical aural skills (when listening for the intonation), as well as theoretical knowledge (e.g. how the tuning of the strings and the piano is different).

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the cellist identifies a problem, and they all participate in constructing and maintaining a JPS. They seem to be aurally aware, in terms of attentiveness, sharing of ideas from their mind's ears, and utilization of knowledge resources. However, few tools are shared. In fact, the ensemble's negotiations primarily contribute to maintaining the JPS. Whether they solve the problem in the end is not clear. One tool is shared: the suggestion of tuning the instruments. From the negotiations, one cannot tell whether this tool solved the problem.

In the focus group interview, the pianist commented on episode 2A, and we had the following conversation:

Pianist: […] when those two [violinist and cellist] play together and rehearsed intonation […] I think it was good that they played just the two of them in order to hear the intonation […]

Aslaug: That they do it alone, that's what you were thinking of?

Pianist: Yes, and that it was nice they rehearsed only that, and that they were thinking of intonation this way.

Cellist: Yes, it's easy to think that the piano is always there to support you, but we should do it just as well without piano. (Interview C, p. 7, my translation)

The pianist is emphasizing that it was good that the strings played without her, and that they were thinking about the intonation problems the way they did. As the researcher I have emphasized that I do not think they found a solution to the problem, because they shared few tools. And a closer look at the pianist's comments reveals that she does not, in fact, comment on the outcome; she simply stated that she liked the way the two string players practiced intonation. The outcome remains an open question. What she does share is this:

Pianist: But I've started thinking more and more about the fact that the piano is well-tempered. That it's not naturally in tune.
(Interview C, p. 7, my translation).

This underlines the comment she had during the episode negotiations: "And if it is to be with the piano, then it needs to be a little higher." This shows how she, as a pianist, has an understanding of intonation as a challenge when playing with strings.

7.3.2 Episode 2B: Rhythm session by the piano

In this episode, the ensemble works on their different rhythms in measures 154 and 155 in the second *dumka* (first and second measure in figure 20). The problem state they have defined is that they are not playing correctly, and not coordinated. Their goal is therefore simultaneity; that is, to coordinate their rhythms according to the score. The strings have complementing rhythms

(sixteenth-note triplets), while the pianist starts playing 32nd-notes in measure 155, which means measure 155 consists of a polyrhythm.

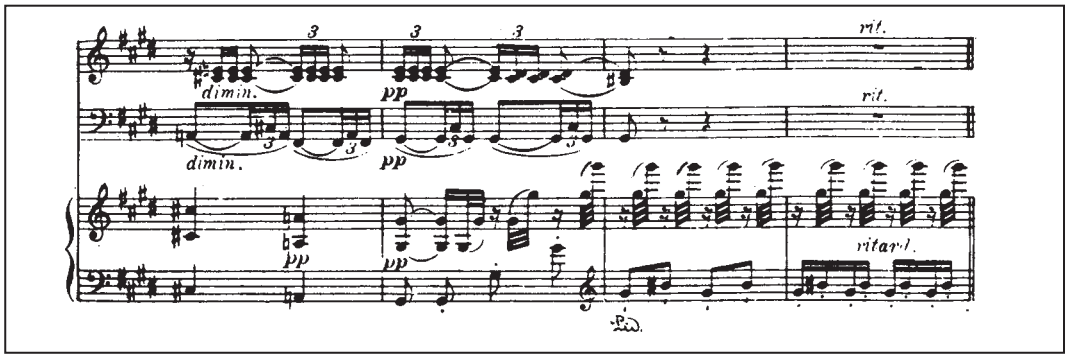

Figure 20: Measures 154–157 (Dvořák, 1973, p. 14).

A Joint Problem Space is constructed around how to get the rhythms correct. Here are excerpts and summaries from the ensemble's negotiations:

Pianist: Can we do it the way we have done once before, that we read the rhythm together? You don't know what everyone has. Only I can see what everybody's got. And then it is difficult to know what it's like. *They all go to the piano.*

Pianist: Here (*points in the score and starts counting in*)

Cellist: I just have to see what you've got first. […] Oh!

They all speak at once, but one understands that they are discovering what rhythms the others have got. The pianist and the cellist both count in, and they sing the rhythms. Laughter as they stop.

Pianist: Once more?

Cellist: Perhaps we should have had a metronome?

Pianist: Maybe. I can knock (knocks on the piano and counts in)

Cellist: Aha!

Pianist: This was better. Once more? The pianist counts in and they sing again.

Cellist:	Once more! They sing again, and then go back to their seats.
Violinist:	We can try to play very clear […] They play the rhythm, with instruments.
Cellist:	Oh, I could just listen to you! (Directed to the violinist).

Laughter. They continue working on the same rhythm, but in context.

Reflexive deconstruction

The pianist is the one who identifies there is a musical problem, by saying: "Can we do it the way we have done once before, that we read the rhythm together?" With this comment, she starts constructing a Joint Problem Space, indicating that they did not play the rhythm well enough, at the same time as she suggests a problem-solving action, which is to "read the rhythm together." She argues that she is the only one with overview of the full score, and that it must be difficult for the others to know how the rhythms relate to each other. The others agree at once, and walk to the piano.

According to the aural awareness definition, the pianist is attentive to their performance of the written rhythms in the score; her opinion is that they should try to improve their performance of it. When they are having the rhythm session by the piano they are all attentive to their own written part *in relation to* the full written score (the compound rhythm), and to the others' oral performance of *their* rhythms. The pianist is also attentive in terms of assessing their singing performance of the rhythms: "This was better."

All of them are sharing ideas from their mind's ears. The pianist is sharing ideas as she constructs the JPS, and along the way, as she is assessing their performance. As she is knocking the beat on the piano, she is also sharing an idea from her mind's ear: her sense of the pulse. Furthermore, when they are about to read and sing the rhythms by the piano, the cellist says: "I just have to see what you've got first. […] Oh!" This comment indicates that the cellist needs to read the other's rhythms as imagined sound before they go on, and the "oh" might indicate that she is discovering something she did not know on beforehand, and therefore learned by listening to the imagined sound in her mind's ear. After they have played with the instruments, the cellist also exclaims, directed to the violinist: "Oh, I could just listen to you!" This indicates that the cellist has

discovered a new way of orienting herself in the musical landscape of the polyrhythm; she can listen to what the violinist is playing.

The ensemble is primarily using practical knowledge resources in order to solve the problem; they decide to sing the rhythms, they keep the pulse by knocking on the piano, and in the end, they play the rhythm on their instruments.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the pianist identifies a musical problem and starts to construct a JPS, and the whole ensemble participates in solving the problem. They seem to be aurally aware, in terms of attentiveness, sharing ideas from their mind's ears, as well as utilization of available knowledge resources.

Three tools were shared: (i) singing the rhythms, (ii) knocking the pulse on the piano, and (iii) playing on the instruments at the end.

The first tool, singing the rhythms together by the piano, has as a special characteristic, in that the problem-solving takes place away from their instruments. Instead, they use their voices to sing the rhythms. The ensemble members express that this problem-solving action is working, which means that, somehow, the singing has mediated their understanding of the rhythms in a different way than playing did. The second tool, knocking the pulse on the piano, arose from the cellist's expressed wish that they had a metronome. This leads the pianist to offer to knock the beat instead. One can assume that the pianist's knocking mediates the ensemble's understanding of the pulse, and hence that it helps them to place the rhythms in their own part in relation to the others' rhythms. The third tool, playing on the instruments at the end, further mediates the ensemble's understanding of the compound rhythm. At this point, they probably have increased insight into what the others are playing, compared to their insight before singing the rhythms by the piano.

In the focus group interview the ensemble commented on episode 2B:

Aslaug:	But why did you choose this episode?
Violinist:	We have done it once before.
Pianist:	Because I think we were aurally aware in a good way. We did it on some of our first rehearsals as well, because there were so many rhythmical things

happening in the piece. And then it became easier to play.

Violinist: Also, one time we switched parts and sang different parts, in order to know how the rhythms related to each other.

Cellist: Yes. Know each other's rhythms.

Violinist: Then, you can have your own rhythm in your head while saying someone else's rhythm. […]

Pianist: I also think it was relevant, because this piece [Dvořák] is so, it has many rhythms, or rhythmical things happening (*the others are nodding*).

Cellist: […] I think it worked doing it like this, and when you do it without the instrument, it's easier to do it with the instrument afterwards, because you have to sort of know it in your head before you know it on the instrument (*the others are nodding*) […] (Interview C, p. 4–5, my translation).

In this excerpt from the interview the ensemble gives several reasons for choosing to discuss episode 2B, and also for their satisfaction with the problem-solving. The pianist argues they chose this problem-solving action because there are so many rhythmical things happening in the piece. The violinist refers to another time they did the same thing and argues it is a good way of becoming familiar with the others' rhythms. The cellist specifically comments on how the ensemble benefited from singing the rhythms: " […] when you do it without the instrument, it's easier to do it with the instrument afterwards, because you have to sort of know it in your head before you know it on the instrument." With this comment she is also emphasizing that singing the rhythms like they did enhances their ideas of the music in their mind's ears.

The idea of having the rhythm session by the piano is an idea the ensemble claims to have got from the aural training course:

Aslaug: […] did you get ideas from there [the aural training course] that you are using now?

Cellist: Yes.

Pianist: Yes. Reading from the score is something we learned there. (Interview C, p. 23, my translation).

Judging from the ensemble's comments, the idea of singing the rhythms before playing them, seems to be useful for them, in particular in the beginning of the rehearsal process.

7.4 Third rehearsal

The repertory of the third rehearsal was all the *dumky*, but due to technical problems with the recording, only the first and second *dumky*, and most of the third were recorded. I start with a brief overview of the kinds of musical problems the students faced and chose to work on in the data that was video recorded.

The analysis of the third rehearsal shows that the ensemble primarily described problem states in relation to dynamics (4), division of musical roles (3), rhythms (3), and energetics (2). Transitions, form, entrances, articulation, string technique, and tempo were each addressed once. Their goals seemed to be either simultaneity, a combination of simultaneity and interpretation, or interpretation. Altogether, three episodes had simultaneity as a goal, three had a goal of both simultaneity and interpretation, and three had a goal of interpretation.

From the third rehearsal I have chosen no in-depth episodes, because they spent most of the time on the recorded video playing through the music, with few stops. Instead, I will move directly to the fourth rehearsal, the additional video observation I did in order to complete the data from the piano trio.

7.5 Fourth rehearsal

The fourth rehearsal was video observed as additional data, due to technical problems with the recording of the third rehearsal. The repertory of this rehearsal was the first five *dumky*. I start with a brief look at the kinds of musical problems the students faced and chose to work on.

The analysis of the fourth rehearsal shows that the ensemble primarily described problem states in relation to energetics (5), rhythm (4), and tempo (4), but also in relation to dynamics (3), division of musical roles (3), entrances

(2), and phrasing (2). Bowing, articulation, time, pulse, balance, intonation, transitions, and vibrato were each addressed once. The ensemble's goals seemed to be either simultaneity, a combination of simultaneity and interpretation, or interpretation. Altogether, seven episodes had simultaneity as a goal, five had a goal of both simultaneity and interpretation, and two had a goal of interpretation.

Among the episodes of the fourth rehearsal, I will describe one in-depth, because it exemplifies how aural awareness can be about deciding in what *way* to listen to each other. This episode has been given a 'serial number' and a title, as shown in table 14.

	Title of the episode	**Problem states and goals**
Episode 4A	"I lead the *ritardando*—you the *accelerando*?"	Division of musical roles, energetics, phrasing *Simultaneity and interpretation*

Table 14: Overview of in-depth episode, fourth rehearsal, the piano trio.

Episode 4A was included in the video excerpts the participants saw before the focus group interview, and an excerpt from the interview is included in my analysis.

7.5.1 Episode 4A: I lead the *ritardando*—you the *accelerando*?

In this episode, the ensemble works on measures 50–58 of the fourth *dumka* (from the third measure in figure 21), and the problem states they have defined have to do with the division of musical roles, the energetics, and the phrasing of these measures. The goal is simultaneity and interpretation. In the music, there is a dialogue between the violinist and the pianist (the cellist is not playing), which has a number of indications regarding energetics and phrasing. There are five expression marks in a row.

A Joint Problem Space is constructed around the coordination and interpretation of the energetics and phrasing: the pianist and violinist must decide the degree of *accelerando* and *ritardando*, and who leads the tempo changes. Here are excerpts and summaries from the ensemble's negotiations:

Violinist: I don't know what to do with the tempo there.

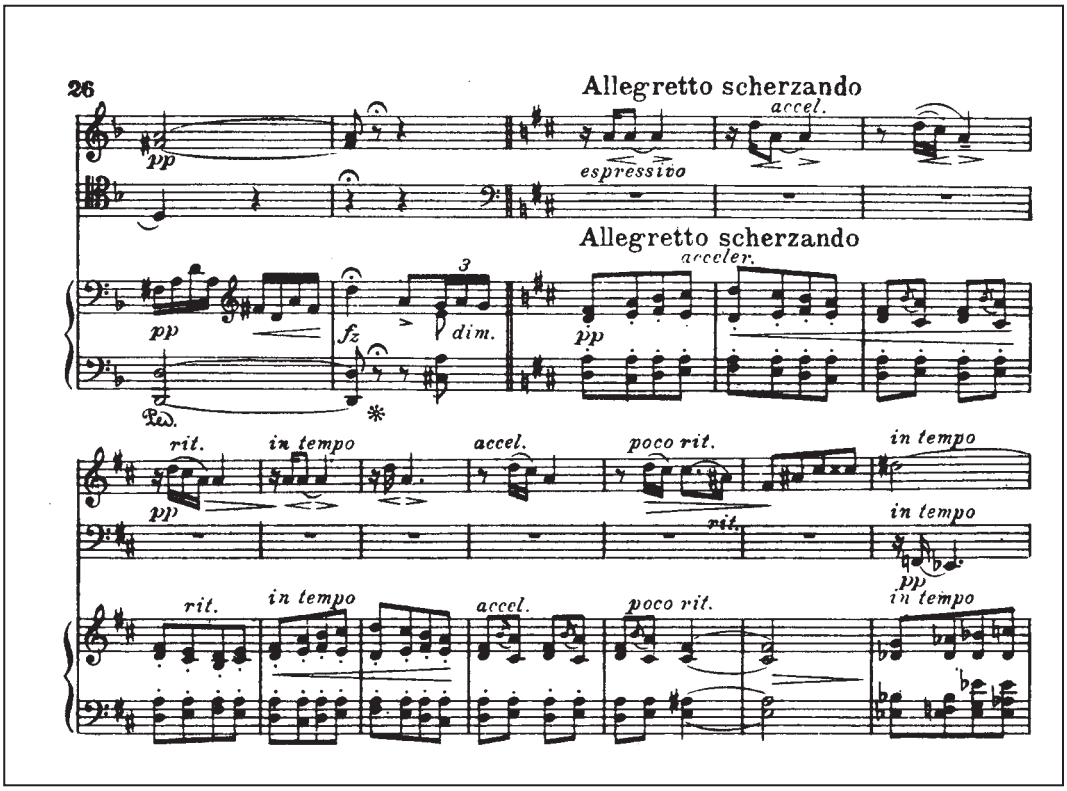

Figure 21: Measures 48–59 (Dvořák, 1973, p. 26).

Pianist: No, it is a lot of rit., in tempo, *accelerando* (*the violinist plays as she talks*). Perhaps we should practice it separately? Because there are a lot of changes that would be cool to manage. It actually says first *accelerando*, then *ritardando*, then tempo, *accelerando*, and then *ritardando* again (*the violinist agrees*). And that is quite a lot in such short time (*laughter*). Shall we just move on?

Violinist: But I was thinking [...], I could lead the *ritardando*, and when the tempo increases, you go ahead? (*directed to the pianist*).

Pianist: Yes, good idea! Shall we try that? [...] *They play.*

Reflexive deconstruction

The violinist is the one who identifies a musical problem, by saying "I don't know what to do with the tempo there." Hence, she starts constructing a Joint Problem Space. The JPS is then immediately co-constructed by the pianist, who confirms problems with the tempo changes, and also lists the whole series of expression marks: "It actually says first *accelerando*, then *ritardando*, then tempo, *accelerando*, and then *ritardando* again."

When it comes to the aural awareness definition, the violinist and pianist are both attentive to the score and to their performance. The violinist shares one idea from her mind's ear, which is also a suggestion of a problem-solving action: "I could lead the *ritardando*, and when the tempo increases, you go ahead?" It is difficult to pinpoint exactly what kinds of available knowledge resources they are utilizing, but they do show insight into the professional terms used in the score, which the composer has used in order to explain the tempo changes. They also show by acquaintance of the musical conventions that they know what to do with these instructions. The suggestion that they divide the responsibility of leading might be based on the utilization of either practical or acquaintance knowledge resources.

Reflexive reconstruction

As the reflexive deconstruction of this episode shows, the violinist identifies a problem, the violinist and pianist construct a Joint Problem Space together, and the violinist comes up with a problem-solving suggestion. The ensemble seems to be aurally aware in terms of attentiveness, but when it comes to sharing of ideas from their minds ears and the utilization of knowledge resources the negotiations are too short to get an in-depth understanding.

Two tools are shared: (i) they use the expression marks in the score, which are professional terms, in their negotiations, and (ii) they divide the responsibility for leading the tempo changes. The first tool seems to contribute to clarifying what the tempo changes are. Reading the instructions out loud seems to mediate the ensemble's understanding of how they are going to play. The second tool, of dividing the responsibility for leading the *ritardando* and *accelerando*, is a practical way of solving the problem, but it also seems to mediate the ensemble's ways of listening. This latter point was also emphasized in the focus group interview, when we discussed this excerpt:

Violinist:	[…] What I think was good about the last excerpt is that we agree on […] perhaps I should lead here and you should lead there, and then kind of meet halfway. […] we play more coordinated […] At first, it did not work at all.
Pianist:	No, it was really difficult
Aslaug:	[…] you made a specific agreement?
Pianist:	Yes, I lead the *accelerando*
Violinist:	And I lead the *ritardando*
Aslaug:	That seemed to work
Pianist:	It did, really. Because then we listened to each others' parts (*the others agree*). (Interview C, p. 6, my translation).

What the ensemble is pointing out is that their problem-solving suggestions worked out well, and the pianist also explicitly says that it changed their way of listening while they were playing. The way I understand the pianist, the tool of dividing responsibility for the tempo changes made them even more aurally aware, and it made it easier to listen to what the others were playing.

7.6 Shared tools

In the second research question of this project I ask what kinds of tools are shared in order to improve the ensembles' playing, and how. The analyses of the in-depth episodes above show that different kinds of tools were shared during the piano trio's rehearsals. I will now summarize and categorize these tools as findings, and also extract how these contributed to the ensemble's collaborative efforts to improve their playing. It is important to note that in order to be a shared tool as described in chapter 3, one or more knowledge resources must be *in use* within the ensemble, and be accepted. This means that knowledge resources that are accepted into a Joint Problem Space can become shared tools, and that other knowledge resources remain available in the collective reservoir. The question is therefore *what kinds* of tools were shared, and *how* they were shared.

In episode 1A (Imaginary triplet) two tools were shared: (i) the ensemble's use of the concept "subdivision," which appears as a *strategic tool* because they first reason out that the duration of the pianist's grace note can be compared to the duration of one third of a triplet, and then they invent an imaginary triplet in the previous measure, and (ii) singing and clapping, which appear as *activity tools*, helping with the reflection within the individual time-outs, and helping each demonstrate her own thoughts musically to the others.

In episode 1B (Intonation of the violinist's A-sharp) only one tool was shared: the information the violinist received from the cellist, that she was playing "C-sharp and E," which appeared as a *conceptual tool*. With this information, the violinist expressed that she knew what to listen for.

In episode 1C (Sixteenth-note triplets dialogue) two tools were shared: (i) isolating the measure, which appeared as a *strategic tool*, mediating the cellist's idea of how the sixteenth-note triplets were in relation to the pianist's rhythm, and (ii) singing, playing, counting, and tapping, which appeared as *activity tools*, explaining the music within the ensemble. These tools might have contributed to mediating the ensemble's notion of the rhythm as well.

In episode 2A (It's easier to tune alone) only one tool was shared: tuning the instruments, which appears as an *activity tool*.

In episode 2B (Rhythm session by the piano) three tools were shared: (i) singing the rhythms together by the piano, which appears as a *strategic tool*, having as a special characteristic that the problem-solving took place away from their instruments, mediating their understanding of the rhythms, (ii) knocking the pulse on the piano, which appears as an *activity tool*, mediating the ensemble's understanding of the pulse, helping them to place the rhythms in their own part in relation to the others' rhythms, and (iii) playing on the instruments at the end, which appears as a *performing tool*, further mediating the ensemble's understanding of the compound rhythm.

In episode 4A (I lead the *ritardando*—you the *accelerando*?) two tools were shared: (i) using the expression marks in the score, the professional terms, in their negotiations, which appeared as *conceptual tools*, contributing to make clear what the tempo changes were, and ii) distributing the roles of who leads the *ritardando* and who leads the *accelerando*, which appeared as a *strategic tool*, solving the problem practically, but also mediating the ensemble's ways of listening.

7.7 The rehearsal process and aural awareness

The comprehensive research problem, asking in what ways the students are aurally aware during their ensemble rehearsals, can be discussed from several viewpoints. One approach is to look at the way the ensembles' aural awareness manifests itself during the course of their rehearsals—taking into consideration both collective and individual perspectives, as well as the time in between the ensemble rehearsals. Therefore, I turn now to data from the focus group interview only, in order to shed light on the ensemble's thoughts about the rehearsal process and aural awareness. The topics touched upon are aural awareness in different stages in the rehearsal process, individual and collective aural awareness in connection with rehearsing, and some thoughts about aural awareness and interpretation.

During the focus group interview I asked the ensemble whether they were aurally aware in different ways in the early and the late stages of a rehearsal process. The ensemble members said that they listen differently in the beginning than they do at the end; they move from a focus on coordination to entirety:

Pianist:	In the beginning I thought more about getting the rhythm right, and of coordination, I listened for that. Then I started listening for […] now we need to start working on the dynamics […] but in the end, I thought more of the entirety.
Violinist:	Then, one is able to listen to the others as well. At first it's easy to just listen to oneself.
Pianist:	It's more heavy work in the beginning. Then, I'm thinking we should just play [...] and get to know the piece.
Violinist:	Yes, get to know the tempo and things like that. Then, it doesn't matter if someone plays out of tune. It's more important to move on.
Pianist:	One could say we listen more and more carefully.
Cellist:	Yes, and more and more critically.
Pianist:	I think this is a good way. If one starts working on the details right away one can get a bit dispirited. […]

Aslaug: So, one listens […] differently as the rehearsal process develops. Fine-tuning the ear as it's needed (*they all agree*).

Violinist: And one knows more about how to listen after a while.

Pianist: Yes, in the beginning I could not have told you how the whole thing should sound, I didn't know the piece well enough […]. If I had known the piece well it might have been different. (Interview C, p. 11–12, my translation).

The pianist in the ensemble describes their listening in the beginning of a rehearsal process as "heavy work." Drawing on Polanyi's (1958) concepts of focal and subsidiary awareness I notice that the focal awareness of their "heavy work" implies listening primarily to oneself, which means they are primarily subsidiarily aware of listening to what the others are playing at this stage. They are also focally aware of their *way* of rehearsing: "get to know the piece" and "move on," as well as on coordination. Furthermore, they emphasize things they are *not* focally aware of at the early stage of the rehearsals: the violinist is not concerned about intonation and the pianist is not concerned about details. As a term for describing how they rehearse more carefully at the end of a process, I suggest that they are "fine-tuning" their ears.

In the focus group interview we also talked about the ways they are aurally aware when they are practicing alone, preparing for the ensemble rehearsals. Three topics were emphasized: practicing intonation and rhythm alone, practicing with the score, and the importance of recordings. The first topic was suggested by the violinist. She said:

Violinist: […] one practices intonation by oneself, in one's own part. When mastering that, it will be easier to adjust in relation to what the others are playing. […] I practice rhythm as well […] it's easier to play with a metronome then. Not that many playing at once, so one can actually hear [oneself]. (Interview C, p. 8, my translation).

This issue, of how ensemble members are aurally aware as they are preparing for the collective rehearsal, will be further discussed in chapter 9.

The second topic, practicing with the score, was mentioned by the pianist. She explained how she got familiar with the others' parts by singing them, and also how she used this as a way of rehearsing:

> Pianist: I did have the full score, so in the beginning [of the rehearsal process] I played my own part the best I could, and sang some of the other parts […] so I could hear the melody and the accompaniment at the same time. I think that's fun. It is a way of being aurally aware. (Interview C, p. 8, my translation).

The pianist not only gets to know the other parts, she also feels that this way of rehearsing is a way of being aurally aware. I assume this is because she is sight-singing the other parts, which demands aural skills of imagining written music in one's mind (cf "notational audiation" discussed in 3.3.3).

The third topic, the importance of recordings, was emphasized by all the ensemble members, and it arose as an answer to the question of how they were aurally aware when rehearsing alone. All three ensemble members seemed to use recordings to get ideas for interpretation of the piece they were working on:

> Violinist: And of course, listen to the composition, recordings.
>
> Cellist: Yes, recordings, absolutely.
>
> Pianist: I did something fun. I put on the recording in my living room, and then I played on top of the recording. […] It wasn't identical, but one gets a […] feeling of the entirety.
>
> Cellist: I used Spotify[54] so that I could hear all the different recordings […].
>
> Violinist: When hearing them right after each other one notices more differences.
>
> Cellist: In particular in this piece [that we are playing], in which there are so many tempo changes. People have very different opinions on that.
>
> Violinist: Indeed! (Interview C, p. 9, my translation).

54 On-demand streaming of music in all genres on the Internet.

The pianist describes how she plays together with the recording and gets a sense of the whole piece, while the cellist and violinist both describe how they use Spotify as a listening source, giving them variety of ideas and input for making their own interpretations.

Finally, the third aspect from the focus group interview that I wanted to accentuate is the ensemble's declaration that aural awareness and interpretation is closely related. In the following discussion the three ensemble members describe this in three different ways:

Aslaug:	So you think interpretation is closely related to aural awareness? […]
Cellist:	I think that interpretation is a mixture of knowledge and aural awareness. One need some theoretical knowledge about music in order to interpret a piece.
Violinist:	[…] in places that are technically difficult, it will be easier to play better once you have a clear interpretative idea. Then one knows how to do it […] with tempo changes and so on […] If one has an interpretative idea in one's mind it's easier to do it. […]
Pianist:	About being aurally aware, we talked about picturing things, playing as if it was very romantic, or playing as if someone were angry […] But that's perhaps imagination? (Interview C, p. 10, my translation).

The cellist is concerned about how theoretical knowledge plays an important role together with aural awareness in interpreting music, and the violinist emphasizes that having an interpretative idea in one's mind is useful (cf "imaging interpretation" as discussed in 3.3.3). The pianist addresses the question of where one draws the line between aural awareness in a 'traditional sense' (e.g. having to do with intonation, rhythms and so on) and imagination: is picturing the character of the music to be aurally aware? The piano trio's comments raise the problem of what kinds of dimensions one may include in 'aural awareness in ensemble rehearsals', something that will be further discussed in chapter 9.

7.8 Summary

The empirical data from video observations and the focus group interview with the piano trio has been thoroughly analyzed and is presented in this chapter primarily through reflexive deconstructions and reconstructions of selected in-depth episodes. These descriptions then formed the basis for a further discussion of the findings in relation to the research questions and the comprehensive research problem.

As a preparation for the cross-case discussions in chapter 8 and 9, the shared tools found in the in-depth episodes were identified in 7.6. In sum, I found that the rehearsals comprised four different kinds of tools: (i) strategic tools, (ii) activity tools, (iii) conceptual tools, and (iv) performing tools. I will return to these in chapter 8, where they will be discussed in relation to the tools shared by the other ensembles.

Finally, in order to prepare for the reflexive level of "critical interpretation" (Alvesson & Sköldberg, 2009) in chapters 9 and 10, I identified some aspects in 7.7 that were particularly salient in the focus group interview: aural awareness in different stages in the rehearsal process, individual and collective aural awareness in connection with rehearsing, and some thoughts about aural awareness and interpretation.

PART III
CROSS-CASE DISPLAY, DISCUSSIONS AND CONCLUSIONS

Introduction to Part III

Part III of the thesis consists of three chapters providing interpretation across the cases, discussion of the findings, and concluding remarks.

Chapter 8 is a "cross-case analysis" (Stake, 2006) and discussion of the three cases that made up Part II. The aim of this analysis is not first and foremost to compare the cases, but rather to get a better understanding of the thesis' subject: aural awareness in ensemble rehearsals. The cross-case findings are presented in a "cross-case display" (Miles & Huberman, 1994): I use the findings from each case as a starting point for making thematic clusters across the cases.

Two thematic clusters are identified: "shared tools" and "ways of negotiating aural awareness." The first, "shared tools," is an answer to the research questions: (i) how is aural awareness part of the ensembles' problem solving processes?, and (ii) what kinds of tools are shared in order to improve the ensembles' playing, and how? In this section (8.1) I begin by summarizing the kinds of tools the three ensembles shared, based on the findings in Part II. Next, I describe the characteristics of each tool in a cross-case analysis, by drawing on several of the theoretical concepts discussed in chapter 3: Wertsch's (1998) understanding of "tools," his concepts of "implicit and explicit mediation," (2007), Grimen's (2008) two "articulation modes" of knowledge, and Polanyi's (1958) concepts of "focal and subsidiary awareness," as well as the triangle explaining the relation between subject, object, and mediating tools (Säljö, 2006, my translation).

The second thematic cluster, "ways of negotiating aural awareness," seeks to answer the comprehensive research problem: in what ways are undergraduate students aurally aware during ensemble rehearsals, and how does their aural

awareness influence their collaborative efforts to improve their playing? In this section (8.2) I describe how the ensembles' shared tools, together with the way they constructed and maintained "Joint Problem Spaces" (Roschelle & Teasley, 1995), can be presented in a "two-dimensional table," in which the horizontal dimension shows a continuum from cooperation to collaboration, and the vertical dimension shows a continuum from no or few shared tools, to several.

Chapter 9, "The Aural Awareness Space in ensemble rehearsals," is both a further discussion of the cross-case findings from chapter 8 and a discussion of all the findings combined. In this chapter I seek to fulfill the aim of the study: to understand the roles and characteristics of aural awareness in ensemble rehearsals. The chapter concludes that three roles have been identified: aural awareness as "standby," aural awareness as "basis for negotiation," and aural awareness as "preparation." The characteristics of aural awareness in ensemble rehearsals are interpreted as "craftsmanship," "scholarship," and "musicianship." These roles and characteristics seem to constitute the ensembles' Aural Awareness Space. This chapter will also include comments related to selected studies from the literature review, as well as reflexive, critical interpretation, raising ideological questions.

Chapter 10 consists of concluding remarks. I begin with a summary of the findings in light of the aim, problem and research questions, then discuss the thesis' potential educational and theoretical contributions, and contributions to the research field. This includes further reflexive, critical interpretation, in which I connect some of the ideological questions raised in chapter 9 to matters of higher music educational politics. The final section includes some retrospective thoughts and future-orientation, including some additional ethical remarks, and finally, the thesis closes with some concluding thoughts and quotations.

8 Tools and ways of negotiating aural awareness

This chapter is a "cross-case analysis" (Stake, 2006) of the three cases of Part II. As a "cross-case display" (Miles & Huberman, 1994) it has an explanatory character, in which I use the findings from each case as a starting point for creating and discussing thematic clusters.

My analytical approach is still that of reflexive interpretation. As discussed in chapter 4, Alvesson and Sköldberg (2009) suggest a dialectic relation between D- and R-reflexivity (deconstruction and reconstruction), that implies moving between tearing down and developing something new or different (p. 313). In Part II, Alvesson and Sköldberg's "D-reflexivity" was used in order to tear down the ensembles' problem-solving processes; I deconstructed the ensembles' aural awareness in every in-depth episode according to my definition from chapter 3, and I looked at how the ensembles constructed and maintained "Joint Problem Spaces" (Roschelle & Teasley, 1995). This analytical approach helped me describing what was going on in the ensembles' rehearsals, and it also challenged some of my intuitive assumptions about the ways in which they would demonstrate aural awareness. Next, "R-reflexivity" was used in order to interpret the problem-solving process in the in-depth episodes. The reflexive reconstructions made it possible to look at how the ensembles' problem-solving actions were shared as tools, in order to improve their playing.

In this chapter, I will begin by summarizing the reflexive reconstruction of shared tools from Part II, which will then be elaborated through theoretical perspectives from chapter 3. I then continue the cross-case analysis by taking the R-reflexivity even further. I combine the findings about shared tools with those

about problem-solving processes from Part II, and thus I begin to move towards a new level of interpreting the data: "interpretation" (Alvesson & Sköldberg, 2009) .

8.1 Shared tools

The focus on how tools are *shared* is in line with the sociocultural perspective on aural awareness in ensemble rehearsals in this thesis; a sociocultural view of knowledge advancement implies that knowledge resources are collectively brought forth and maintained, and shared through human interplay and communication. The focus on shared tools is also related to the empirical, situated activity of ensemble rehearsals. In order to explore aural awareness in ensemble rehearsals I had to identify the conditions specific to this practice. A salient condition of ensemble practice is collaborative learning, which, from a sociocultural perspective, implies that meaning must be negotiated in some way between members of the ensemble. It is within these negotiations that listening has been seen as a central feature, as each group member makes and *shares* personal, aural observations, for the benefit of the improvement of the common musical performance. Since ensemble rehearsals are also oriented by nature to problem-solving, the concept of constructing and maintaining a "Joint Problem Space" (Roschelle & Teasley, 1995) was central in the analysis of the in-depth episodes. Roschelle and Teasley focus specifically on the *process* of collaboration, and the way groups solve problems through a shared conceptual space.

When analyzing the ensembles' in-depth episodes I found that the string quartet's in-depth episodes comprised four kinds of tools: (i) strategic tools, (ii) analytical tools, (iii) activity tools, and (iv) conceptual tools. The clarinet trio's in-depth episodes comprised five kinds of tools: (i) conceptual tools, (ii) interpretative tools, (iii) analytical tools, (iv) activity tools, and (v) performing tools. Finally, the piano trio's in-depth episodes comprised four kinds of tools: (i) strategic tools, (ii) activity tools, (iii) conceptual tools, and (iv) performing tools.

Altogether, six different kinds of tools were identified: *activity, strategic, analytical, conceptual, interpretative, and performing tools.* In the upcoming cross-case analysis, I describe the characteristics of each tool category, by drawing on Wertsch's (1998) understanding of "tools," his concepts of "implicit and explicit mediation" (2007), Grimen's (2008) two articulation modes of knowledge, and Polanyi's (1958) concepts of "focal and subsidiary awareness," as well as the

triangle explaining the relation between subject, object and mediating tools (Säljö, 2006, my translation).

The six categories suggested below are not mutually exclusive; the collaborative and musical processes through which the ensembles improved their musical performances are complex. Wertsch's (1998) understanding of tools as having no fixed meanings is thus an important premise for the *analytical* categories I have constructed. Because tools gain their contextual meaning when the ensemble, or one of the ensemble members, decides to use and share them in a certain way, singing, for example, might be an activity tool as well as a performing tool. This will always depend on the current problem, and the way the students decide to solve it. I have therefore first looked at the features of all the shared tools found in Part II in light of the theoretical perspectives accounted for above, and then created categories that describe these features the best. Thus, it is the combination of different theoretical elements that constitute the categories.

In the following, the string quartet will be referred to as "SQ", the clarinet trio will be referred to as "CT" and the piano trio will be referred to as "PT," and I use the "in-depth episode names" from chapters 5–7. For example, SQ 1A refers to the string quartet's episode 1A.

8.1.1 Activity tools

All three ensembles shared *activity tools*. Activity tools are concrete suggestions of "problem solving actions" (Roschelle & Teasley, 1995) that have action as their center—or, they may be supportive actions that are somehow part of the ongoing stream of the problem-solving. The actions as such are deeply integrated into the problem-solving processes and have a practical character. What all the activity tools have in common is the aim of trying to improve the current listening condition or provide a better basis for further listening.

There were several examples of "explicit mediation" (Wertsch, 2007), in which the tools were intentionally introduced into the problem-solving process. These kinds of activity tools had the action at the center, for example the ensemble's tuning of their instruments (SQ 3A and PT 2A). In these cases, the ensembles recognized the need for tuning their instruments, both in general, and for the benefit of the current problem state. Another example of an activity tool is building a B major chord from the keynote (SQ 1A). When the ensemble was stacking this chord, note by note, the action of doing this was central, though it had the aim of providing a better basis for assessing the quality of their

intonation. Other activity tools that had action at their center were the pianist knocking the pulse on the piano (PT 2B), and the clarinetist counting the pulse out loud (CT 3B)—both of which were problem-solving actions. In these processes the "focal awareness" (Polanyi, 1958) of the ensembles seemed to be directed primarily at the tool, while the musical problem being addressed was the focus of their "subsidiary awareness" (Polanyi, 1958).

There were also examples of "implicit mediation" (Wertsch, 2007), in which the tools were not intentionally introduced, but rather arose from the ongoing stream of communication and problem-solving. In these kinds of activity tools the action was completely integrated; as physical gestures, such as the cellist beating the rhythm with her foot (CT 3A), or clapping and tapping of the pulse (PT 1A + 1C). In the example with the cellist, it is difficult for the observer or researcher to know whether the action was mediating her understanding, and it is possible that the cellist herself did not know this. For the rest of the ensemble, the cellist's tapping foot was simply a part of their ongoing stream of communication, noticed or not. The clapping and tapping were integrated actions in the same way. In all these processes it seems as if the "focal awareness" (Polanyi, 1958) was directed at the music they were playing, while the physical gestures had "subsidiary awareness."

Within the different meanings of the activity tools shown above, both the "action" articulation mode, and the "verbal" articulation mode (Grimen, 2008) are represented. The action articulation is represented in all the examples, because the action itself dominates the problem-solving process. However, for the activity tools which mediate explicitly, some kind of verbal articulation is necessary: the ensemble members need to share their ideas for an action with the rest of the ensemble.

To conclude my discussion of the mediation process of activity tools: the ensembles (subjects) were adding actions (mediating tools) to the music or problem-solving activity (object). Their aural awareness was expanded by *providing a better basis for further listening*; once the string quartet members knew which role they had in the chord—keynote, third, or fifth—they could tune the chord. Awareness was also expanded in terms of *improving the listening conditions*: by beating the eight-notes with her foot, the cellist subdivided the music, which made it easier to place the entrances.

8.1.2 Strategic tools

Only the string quartet and the piano trio shared *strategic tools*. Like activity tools, the strategic tools are concrete suggestions of "problem-solving actions" (Roschelle & Teasley, 1995). They differ from activity tools in being used to create new points of reference, or to change the way the ensembles work on a problem. The category of strategic tools thus involves reflection: the ensembles are discussing *how* to act in order to solve their problems by expanding their range of practical approaches. Strategic tools are also characterized by the implementation of an action plan.

The verbal articulation mode (Grimen, 2008) and explicit mediation (Wertsch, 2007), are therefore characteristics of the strategic tools, as these tools are intentionally introduced and verbally explained. However, even though the verbal articulation mode is important for sharing strategic tools, the tools themselves ultimately become actions when they are put into effect. Some of the strategic tools shared by the string quartet and the piano trio had in common that the ensembles created a musical act that was not written in the score, in order to get a better understanding of the music and the musical problem they had constructed. This happened when they played an open D for intonation purposes (SQ 2C), when they played only the first note in the rhythmic figure (SQ 3B), when they compared the G-sharps of the violinist and the cellist (SQ 3B), when they created an imaginary triplet using subdivision (PT 1A), when they isolated a difficult measure for attention (PT 1C), when they sang the polyrhythms together by the piano (PT 2B), and when they divided between the pianist and violinist the lead role for the *ritardando* and *accelerando* (PT 4A). Other strategic tools had in common that the ensemble changed something in the score. Three times the string quartet played sustained notes (SQ 1A, SQ 2C and SQ 3B) in order to stop and listen to them for intonation purposes. In all these episodes, the ensembles' focal awareness (Polanyi, 1958) was very much directed to the problem-solving action itself.

To conclude about the mediation process of strategic tools: the ensembles (subjects) created something that was not written in the score, or changed something in the score (mediating tools) in order to increase their understanding of the music (object). Their aural awareness contributed to the creation of *new points of reference*; when using subdivision and inventing an imaginary triplet, the ensemble could hold this sound in their mind's ears and use it as a reference point for playing the entrance. Awareness also contributed to the creation of

other ways of working on a problem: during the singing rhythm session by the piano, they were able to listen differently to each other's parts than was possible when they were playing.

8.1.3 Analytical tools

Only the string quartet and the clarinet trio shared *analytical tools*. The analytical tools are characterized by their contribution to the construction and maintenance of a Joint Problem Space. They primarily mediate the ensembles' deeper understanding of the problems they construct, by providing more information. Examples are when they consulted their own or each other's parts (SQ 3B, CT 2B, CT 3A), consulted the pianist's full score (CT 3B) in order to get an overview of the music, listened to the music's past by assessing and analyzing what had just been played (SQ 3B); analyzed a chord in terms of keynote, third, and fifth (SQ 1A); commented on the division of musical roles (CT 1B); and analyzed the phrase of the melody (CT 2A).

Within these different types of tools, both the "action" and "verbal" articulation modes (Grimen, 2008) are represented. The action mode is represented by consulting and listening (with the parts, or the score), and by thinking and listening (in the mind's ear). Thus, the action mode seem to belong to "implicit mediation" (Wertsch, 2007), the tools arising from the ongoing stream of communication and problem-solving. The verbal articulation mode, on the other hand, is represented by spoken comments, and seems to belong to "explicit mediation," as these tools are intentionally introduced and verbally explained.

To conclude about the mediation process of analytical tools: the ensembles (subjects) provided more information about what to listen for (mediating tools) in order to increase their understanding of the problems they had constructed (object). That means their aural awareness was directed toward *reading music*—consulting the parts or the score—or toward *understanding or interpreting something from the score*—analyzing a chord or a phrase.

8.1.4 Conceptual tools

All three ensembles shared *conceptual tools*. The conceptual tools contribute to "descriptions of the current problem state" and the construction of a "shared conceptual space" (Roschelle & Teasley, 1995). They mediate the verbal

communication within the ensembles, and contribute to a shared understanding of the problems that are being described.

The four examples from the ensembles show that the types of conceptual tools can be various. A conceptual tool may be the use of terms, such as upbeat, accent, gap, and energy, that point the ensembles' attention to a specific musical element (SQ 2B), it may be the agreement that they need to play straight (CT 1A), the sharing of information about which notes an ensemble member is playing (PT 1B), or the use of instructions and professional terms from the score in the negotiations (PT 4A).

Conceptual tools primarily direct the ensemble members' aural attention, or they explain how one or several ensemble members hear something. The verbal articulation mode (Grimen, 2008) is therefore salient. Furthermore, it is difficult to interpret whether the examples of mediation processes above were explicit or implicit (Wertsch, 2007). That will depend on the ensemble members' level of awareness of the conceptual tools they are using.

8.1.5 Interpretative tools

Only the string quartet and the clarinet trio shared *interpretative tools*. Interpretative tools can be connected to an "awareness of available problem solving actions" (Roschelle & Teasley, 1995). When the ensembles shared interpretative tools they used both everyday language and professional terms, as well as metaphors. Thus, only the "verbal articulation" mode (Grimen, 2008) is represented. Furthermore, the tools seem to belong to "explicit mediation" (Wertsch, 2007), as they were intentionally introduced and verbally explained. It is the verbalization that makes the interpretative tools different from the next category: performing tools. Examples of interpretative tools are the suggestion that the pianist in the ensemble should "shine" more when he is playing the theme (CT 1B), the suggestion in the quartet that they use more *sforzandos* and *crescendo* (SQ 3B), and the use of metaphors in order to describe a mood or the character of the music, as in "waves" and "ocean" (CT 2A, CT 2B).

To conclude about the mediation process of interpretative tools: the ensembles (subjects) used different kinds of verbal language (mediating tools) in order to improve the interpretation of the music (object). What characterizes such comments is that they are based on ideas from the mind's ear, and that the sharing of such ideas implies that one must explain how one imagines the music. The recipients of such explanations—the other ensemble members—must in turn

try to evoke this interpretation within *their* mind's ears. Hence, the members of an ensemble might listen differently to the music after such negotiations.

8.1.6 Performing tools

Only the clarinet trio and the piano trio shared *performing tools.* The performing tools are characterized by the ensemble members' sharing of ideas from the mind's ear through musical performance, and also the construction and maintenance of a Joint Problem Space. The "action" articulation mode (Grimen, 2008) is most salient. Performing tools may belong to either "explicit" or "implicit" mediation (Wertsch, 2007): they may be intentionally introduced, or something an ensemble member does without thinking of whether it helps mediate the ensemble's understanding of the problem they are working on.

Performing tools were manifested as demonstrations by singing and playing. Singing was used in order to show the direction of a phrase (CT 2A, CT 2B), once simultaneously with conducting (CT 2A). There were two instances of playing as a performing tool. In one, the pianist played the cellist's part in order to help with a rhythmic challenge (CT 3B), and in the other the ensemble played after they had a singing rhythm session by the piano (PT 2B).

To conclude about the mediation process of performing tools: the ensembles (subjects) sang or played (mediating tools) in order to explain an interpretative idea, or to understand a musical part (objects). That means, the ensembles' understanding was mediated through a musical performance, in their sharing of ideas from their mind's ears.

8.2 Ways of negotiating aural awareness in ensemble rehearsals

The second part of the research problem in this study concerns the ensembles' "collaborative efforts to improve their playing." Applying a sociocultural framework to this study of chamber music ensembles implied a specific focus on the ensemble's problem-solving processes. For the purpose of analyzing these processes, I used the theoretical concept of Joint Problem Space. The analyses of in-depth episodes then revealed interplay between a collaborative dimension and a dimension of shared tools.

8.2.1 A two-dimensional table of negotiations

Table 15 presents in two-dimensional form the way findings from Part II can be described as different "ways of negotiating aural awareness in ensemble rehearsals." The horizontal dimension shows a continuum from cooperation to collaboration. The starting points in the creation of this scale were findings from each in-depth episode, which showed that Joint Problem Spaces (JPS) were constructed and maintained in quite different ways by the ensembles. A JPS was sometimes constructed quickly and sometimes slowly; some remained not fully constructed. There was also variation in the degree to which the various ensemble members participated in the construction and maintenance phases, as well as that of suggesting problem-solving actions. Roschelle and Teasley's (1995) definition of collaboration, described in 3.2.6, further informs the horizontal dimension: they emphasize that there is a distinction between "collaborative" and "cooperative" problem-solving. They claim that "cooperative work is […] an activity where each person is responsible for a portion of the problem solving," and that collaboration, on the other hand, is "the mutual engagement of participants in a coordinated effort to solve the problem together" (p. 70).[55] The vertical dimension takes the thematic cluster of shared tools (8.1) as a starting point. In this table, though, the focus is on the number of shared tools within a problem-solving process, and the continuum is therefore from few or no shared tools, to several shared tools.

Four forms of negotiation have been identified: *expert negotiations*, *complete negotiations*, *incomplete negotiations*, and *personal negotiations*. Each of these has been given a square in table 15, according to how they fit the scale degrees of collaboration and shared tools respectively.

55 Seddon and Biasutti's (2009) study, which was presented in the literature review, also draws a distinction between cooperation and collaboration, the difference being the amount of creativity: cooperation involves either verbal or non-verbal communication about orgnizational matters or matters of coordination, while collaboration involves either verbal or non-verbal communication about interpretation and creative risks.

	Several shared tools		
Cooperation	Expert negotiations	Complete negotiations	Collaboration
	Personal negotiations	Incomplete negotiations	
	Few or no shared tools		

Table 15: Four ways of negotiating aural awareness in ensemble rehearsals

I will now explain what characterizes these four ways of negotiating aural awareness in ensemble rehearsals, and also how the in-depth episodes from Part II can be understood in light of this two-dimensional table. Most in-depth episodes can be categorized within one form of negotiation, but some negotiations change their form during a problem-solving process. This is something Roschelle and Teasley (1995) also found, and they describe a situation from their empirical data like this: "Challenge six began with strong individual contributions and ended with strong shared contributions" (p. 80). In the upcoming descriptions, such movements within the table will be described when they appear.

8.2.2 Expert negotiations

The upper left square of the two-dimensional table has been titled *expert negotiations*. In this way of negotiating aural awareness there are several shared tools, and the problem-solving appears to be cooperative: each ensemble member seems to be responsible for only a portion of the problem-solving. What characterizes the expert negotiations is that one ensemble member appears as an expert at solving the problem that is constructed, or the ensemble members are experts by turns. The one acting as expert shows extra energy during the problem-solving process, and suggests one or more tools that are shared in the ensemble. Hence, expert negotiations are a bit disconnected and incohesive, because there are few comments during the problem-solving process confirming—or rejecting—suggestions of problem-solving actions. Yet, one may still call them negotiations, because even though one takes the lead, the others are responding to the suggestions, whether verbally, non-verbally, or

musically. It is interesting to note that the ensembles' problems do often seem to be solved within the expert negotiations.

Three in-depth episodes from Part II are categorized as expert negotiations. "Tuning a melodic rise" (SQ 2C) is the first. In this episode there were three experts in a row: first the violist instructed the second violinist to play a reference note, then the first violinist told the others they were out of tune, and finally the second violinist suggested sustaining the top note. The first and last of these were defined as shared *strategic tools* in the in-depth analysis, and this made up several shared tools.

"Rhythmic displacement" (CT 2B) is also an in-depth episode categorized as expert negotiations; however, these negotiations changed form during the episode, and ended up as complete negotiations (8.2.3). In this episode, both the clarinetist and the cellist were each trying to construct a JPS, and in the first part of the negotiations, the ensemble was therefore attempting to solve two parallel problems. At this point, the cellist and the clarinetist both appeared as experts. The cellist was "an expert at interpretation," focusing on which note should be emphasized, while the clarinetist was "an expert at simultaneity," focusing on their lack of coordination according to the score—observing that they were not ending their phrases together. Thus, their negotiations were cooperative. Although the cellist's expert role was also relevant, the ensemble ended up solving the problem suggested by the clarinetist. These short negotiations at the end of the episode were complete, in terms of collaboration and several shared tools. Concretely, what happened was that the cellist had hurried past a dotted note in the rhythmic displacement, and ended up ahead of the others. The *analytical and performing tools* shared by the clarinetist solved this problem: she explained that the measures feel like they are in 4/4 (rhythmic displacement) and she sang it to the cellist, who confirmed by stating that her phrase also lands on the first beat.

"Sixteenth-note triplets dialogue" (PT 1C) is also an in-depth episode primarily defined as expert negotiations. This is because the pianist appeared as an expert regarding the cellist's part, by trying to explain and play how the rhythms should sound. However, the categorization of this episode as expert negotiations is based on the verbal communication. Looking at the non-verbal actions taking place, the cellist is thinking a lot to herself, while tapping the pulse. She is also the one who solves the problem in the end, by suggesting the *strategic tool* of isolating the difficult measure. With this in mind, the episode

can also be categorized as personal negotiations (8.2.5), characterized by cooperation and few or no tools, but with the problem ultimately being solved.

8.2.3 Complete negotiations

The upper right square of the two-dimensional table has been titled *complete negotiations*. In this way of negotiating aural awareness there are several shared tools, and the ensembles' collaboration is salient. What characterizes the complete negotiations is that all, or the majority, of the ensemble members contribute in the problem-solving process, both in terms of constructing and maintaining a Joint Problem Space, and the mutual engagement and the coordinated effort to solve the problem together (Roschelle & Teasley, 1995). Several shared tools also indicate that there has been "construction of shared knowledge," which is the overall aim of the Joint Problem Space. Also, Roschelle and Teasley's description of successful problem-solving illustrates and underlines the characteristics of the complete negotiations in this thesis:

> In analysing collaborative work, we look for dialogues in which turn transitions are smooth, and the sequence of talk follows a cooperative pattern. In periods of successful collaborative activity students' conversational turns build upon each other and the content contributes to the joint problem solving activity." (Roschelle & Teasley, 1995, p. 76).

Altogether, ten of the in-depth episodes from Part II are categorized as complete negotiations:

1. "Tuning a series of B major chords" (SQ 1A)
2. "Both accent and energy" (SQ 2B)
3. "Exploring aspects of a rhythmic passage" (SQ 3B)
4. "Chords as backcloth for the piano solo" (CT 1B)
5. "The world's longest line" (CT 2A)
6. "Playing separately and together" (CT 3A)
7. "Skipping a pause—ending up ahead" (CT 3B)
8. "Imaginary triplet" (PT 1A)
9. "Rhythm session by the piano" (PT 2B)
10. "I lead the *ritardando*—you the *accelerando*?" (PT 4A)

I will look more closely at numbers 3, 5, and 9—a random sample representing all three ensembles. The first of two Joint Problem Spaces within the in-depth episode "Exploring aspects of a rhythmic passage" (SQ 3B) is an example of complete negotiations. The violist identifies a problem, and they all participate

in solving it. The ensemble seems to be aurally aware, in terms of attentiveness, sharing of ideas from their mind's ears, and the utilization of knowledge resources. Three tools were shared in this part of the episode: a *strategic tool* (to play only the first note in the figure), an *analytical tool* (the cellist consulting the violist's part) and *interpretative tools* (suggestion of more *sforzandos* and *crescendo).* In general, the ensemble's negotiations built upon one another, and the content of the negotiations contributed to solving the problem.

"The world's longest line" (CT 2A) is another example of complete negotiations. In this episode, the cellist invites the clarinetist to explain how she wants to interpret the melody from the beginning of the movement. Together, they discuss and solve the problem collaboratively. Four tools were shared: two *performing tools* (the clarinetist singing and conducting, and the cellist singing), one *interpretative tool* (the clarinetist describing the music in metaphors), and an *analytical tool* (the clarinetist describing how long her phrase is). Hence, a high degree of both collaboration and tools helped the ensemble solve the problem.

"Rhythm session by the piano" (PT 2B) is a third example. In this episode, the ensemble seems particularly satisfied with their way of solving the problem they had described. Instead of playing a difficult polyrhythm, they decided to sing it, and also read together from the pianist's full score. Altogether, three tools were shared: the *strategic tool* of singing the rhythms together by the piano, an *activity tool* (knocking the pulse on the piano) and a *performing tool* (playing on the instruments at the end). The ensemble's negotiations built upon one another, and the content led to a solution to the problem they had described.

8.2.4 Incomplete negotiations

The lower right square of the two-dimensional table has been titled *incomplete negotiations*. In this way of negotiating aural awareness, there is collaboration, but few or no shared tools. What characterizes the incomplete negotiations is that all, or the majority of the ensemble members, contribute to construct a Joint Problem Space. They all have plenty of energy, but because knowledge resources are not accepted into the JPS, they end up sharing few or no tools. With few or no shared tools, their collaboration is unable to sustain the JPS or solve the problem.

Altogether, four of the in-depth episodes from Part II are categorized as incomplete negotiations: 1: "Intonation of parallel chromatic lines" (SQ 2A), 2: "Entering without the count of one" (CT 1A), 3: "It will probably be all right" (CT 2C), and 4: "It's easier to tune alone" (PT 2A). I will examine numbers 1 and 3 more closely.

"Intonation of parallel chromatic lines" (SQ 2A) shows that the ensemble are constructing and maintaining a Joint Problem Space. However, none of the suggested knowledge resources seems to be accepted into the JPS, and it is my interpretation that no tools are shared. The ensemble members are all active, and they all try to solve the problem, but their negotiations do not follow a logical progress, which affects the problem-solving process, and, in the end, results in a failure to solve the problem.

"It will probably be all right" (CT 2C) is another example of incomplete negotiations. The clarinetist identifies a musical problem, and she attempts to construct a Joint Problem Space around their lack of coordination in a transition. However, they do not manage to construct this JPS, and instead start constructing another one. In the end, they work mostly on the second problem and do not solve the first, which was the original reason they stopped playing. No tools were shared.

8.2.5 Personal negotiations

The lower left square of the two-dimensional table has been titled *personal negotiations*. In this way of negotiating aural awareness, there are few or no shared tools; cooperation is salient, but the negotiations are hardly even cooperative, because only one ensemble member seems to be responsible for the problem solving. Personal negotiations are characterized by a single ensemble member showing extra energy during the problem-solving process, but not collaborating much with the others. This makes it difficult for the ensemble to construct a Joint Problem Space. It is unclear whether the problems are ultimately solved. This is because the problem-solving processes leading to these solutions have an individual character and are difficult to grasp, both for the rest of the ensemble and for the researcher.

Two in-depth episodes from Part II are categorized as personal negotiations. "Who is out of tune" (SQ 3A) shows that the ensemble does not fully manage to construct a Joint Problem Space, and that they instead start constructing a second JPS. Neither of the problems are solved. Along the way, three problem

solving actions are suggested, but all of them are rejected. Each ensemble member seems to have his or her "own" personal negotiation. The only action that can actually be regarded as a shared tool in this episode is that they decide to tune their instruments, as a way of 'resetting' their intonation problems.

"Intonation of the violinist's A-sharp" (PT 1B) is also categorized as personal negotiations. In this episode, the violinist tries to construct a Joint Problem Space, but she does not describe the problem in a way that the others easily are able to grasp. Instead, she asks the cellist questions about which notes *she* is playing. The violinist then seems to be satisfied with this information, but her reflections about how it might solve the problem are not clear. Hence, the negotiation has an individual character. What *can* be labeled as a shared tool in this episode is the factual information the violinist receives from the cellist, that she plays "C-sharp and E."

8.3 Summary

The cross-case analysis of findings from Part II showed that the ensembles shared six kinds of tools: *activity, strategic, analytical, conceptual, interpretative*, and *performing tools.* Strategic tools and activity tools were the most often shared. The analysis also showed that the ensembles ways of negotiating aural awareness could be described as *expert negotiations, complete negotiations, incomplete negotiations* and *personal negotiations*, explained through a two-dimensional table with scales going from cooperation to collaboration, and from few or no shared tools, to several shared tools. *Complete negotiations* were the most common kind found in the in-depth episodes, which mean that in the majority of the in-depth episodes, the ensembles managed to construct a problem, maintain it, and solve it, and they did this through collaborative negotiations in which different knowledge resources were accepted into the problem-solving process and led to several shared tools. Finally, it can be noted that the different ways of negotiating aural awareness in the chosen in-depth episodes were distributed across the three ensembles; no ensemble stood out by emphasizing one way of negotiating.

9 The aural awareness space in ensemble rehearsals

This chapter is a further discussion of the cross-case findings in chapter 8, as well as a discussion of all the findings combined, and it seeks to fulfill the overall aim of the study: to understand the roles and characteristics of aural awareness in ensemble rehearsals. As regards reflexivity, I have now reached the level of "critical interpretation" (Alvesson & Sköldberg, 2009). According to Alvesson and Sköldberg, discussions on this reflexive level might include aspects such as ideology and power (p. 273). In this chapter, I focus on ideology in higher music education, by asking ideological questions in relation to the roles and characteristics of aural awareness. In the final chapter, this ideological scope will be broadened, as I include higher music education politics into my discussion of this thesis' potential contributions.

I start, however, by summarizing the way the concept of Joint Problem Space was used in Part II, in order to explain how a conceptual move from a "problem space" to an "aural awareness space" can provide the grounds for discussing the findings in relation to the overall aim of the study.

9.1 From "problem space" to "aural awareness space"

This thesis has focused on problem-solving processes, and the role of aural awareness in such processes. The concept of Joint Problem Space (JPS) has therefore been central in the analyses of the empirical data, and this concept was defined in chapter 3 as a shared conceptual space that is negotiated through collaborative problem solving. Taking Roschelle and Teasley's (1995)

four components of a JPS as a starting point,[56] I found that the "goals" (first component of JPS) of the ensembles in this study were either (a) to improve simultaneity alone, (b) to improve simultaneity *and* interpretation, or (c) to improve interpretation alone. All these goals were aimed at improving the ensembles' performance. The ensembles described their "current problem states" (second component of JPS) in terms of "elements of music" (Vea, 1981) and "elements of musical expression" (Pratt, 1998)—such as problems with "rhythm" or problems with "articulation"—as well as additional problems with for example phrasing, bowing, transitions or character. Thus, the ensembles' aural awareness was directed toward a variety of elements of the notated music, and the performed music.

I have interpreted the ensembles' "awareness of available problem-solving actions" (third component of JPS) by looking at the ways they have utilized "available knowledge resources." The conclusion was that theoretical, practical (Ryle, 1949), and acquaintance knowledge (Swanwick, 1994) were all forms of knowledge utilized by the ensembles. Furthermore, the ways the ensembles "related goals, problem states and available actions" (fourth component of JPS) have been interpreted through the concepts of "tool" and "mediation" (Vygotsky, 1978, 1981; Wertsch, 1998, 2007), concluding that when knowledge is accepted into a JPS, the ensembles manage to share tools, which in turn often leads to a solution to the constructed problem.

The Joint Problem Spaces observed in the ensemble rehearsals in this study can therefore be described as defining, negotiating, and solving problems through the sharing of knowledge. Based on the empirical findings, I will now shift focus from the theoretical concept of a Joint Problem Space, to my suggested concept of an *Aural Awareness Space in ensemble rehearsals*. So far in the thesis, the concept of Joint Problem Space has been a framework for discussing aural awareness as a component of problem-solving within ensemble rehearsals. By taking the concept of Aural Awareness Space as a starting point, the problem-solving instead becomes a component of *this* space—which inverts the space and its contents; however two keywords remain common to both concepts: negotiations and knowledge.

In 9.2 and 9.3 I therefore refer to the Aural Awareness Space as having a "field of negotiations," which describes the roles of aural awareness in ensemble

56 The four components of a JPS are: (a) goals, (b) descriptions of the current problem state, (c) awareness of available problem-solving actions, and (d) associations that relate goals, features of the current problem state, and available actions (Roschelle & Teasley, 1995, p. 70).

rehearsals, and a "field of knowledge," which describes the characteristics of aural awareness in ensemble rehearsals. By combining the empirical insights about these roles and characteristics, it becomes possible to understand more about the ways in which undergraduate music students are aurally aware during ensemble rehearsals, in their collaborative efforts to improve their playing.

9.2 The roles of aural awareness in ensemble rehearsals

The first part of this study's twofold aim was to understand the roles aural awareness plays in ensemble rehearsals. I will argue that three roles can be identified: aural awareness as "standby," aural awareness as "basis for negotiation," and aural awareness as "preparation." These roles constitute the "field of negotiations" within the defined Aural Awareness Space. They have in common that they all have a supportive function in relation to musical performance.

Ideologically, these supportive functions are interesting in the context of higher music education, because they are of direct relevance for the debate about whether aural awareness is a means or an end. Taking the curricula for the undergraduate performance studies at the Norwegian Academy of Music (NAM) as a starting point, the supportive roles of aural awareness found in the present research study concurs with the overall aim of the aural training subject—which is to be a complementary subject (2.1.2), and thus a means for the education of "competent and independent musicians" (NAM, 2013, my translation). However, aural training is also a separate subject, implying that "inside" the aural training courses, one finds that aural awareness also has the role as an end, although this may be about to change (2.1.2). In this thesis, however, I see my job as a researcher only to point out what may be a paradox about the roles of the aural training subject in higher music education. I will emphasize, though, that in the empirical data in this thesis, the *supportive* functions of aural awareness are very clear and salient.

9.2.1 Aural awareness as standby

The role of "standby" describes how the ensemble members are aurally aware *of* their performance and the notated music, by listening critically. As discussed in my definition of aural awareness in ensemble rehearsals in 3.3.3, the

ensembles need to be attentive. Aural awareness as standby means that the ensembles *assess* the music they are playing and their performance of it, with the purpose of *identifying* possible musical problems. A comment from the clarinetist in the study, from when I asked what was going on inside their mind's ear, may elaborate the idea of the standby role:

> Clarinetist: […] there is this [voice] that is there all the time, making us aware of what we are doing, and making us able to improve. One cannot practice without that little voice noticing everything you do […] (Interview B, p. 13, my translation).

The empirical findings revealed three descriptions of aural awareness as part of the rehearsal process, which inform the role of "standby." Common to these descriptions is that the ensemble explains how they need to adjust their listening along the way, which means that their aural awareness is not at all "uniform."

The cellist in the clarinet trio describes aural awareness in ensemble rehearsals as an "hourglass." In early phases of the rehearsal process, their aural awareness is "wide," like the top of an hourglass, and is focused on the entirety of the piece. In the middle of their rehearsal process, their aural awareness is focused on details, as in the narrow funnel of an hourglass. Then, in the late stages of a rehearsal process, the focus again broadens to encompass the entirety of the piece. Drawing on Polanyi's (1958) concepts of focal and subsidiary awareness, I would suggest that the ensemble sometimes has focal awareness of the entirety, with a subsidiary awareness of specific musical details, and at other times, their awareness of musical details is focal, while they retain a subsidiary awareness of the role this musical element plays in the entirety of the piece; both of these belong to the role of standby. The members of the piano trio describe their aural awareness in ensemble rehearsals as moving from a focus on coordination to a focus on entirety. They also note that they gradually listen more and more carefully—more critically—and that they gradually know more about how to listen–to each other and to the music. In other words, they are fine-tuning their ears as the process develops. The string quartet also claimed they were "changing" their aural awareness along the way. At first, they were focused on playing their own part, without much energy to listen to the others. Then, they gradually listened more to each other.

Based on these descriptions, it seems as if the standby role of aural awareness is fluid, and changes focus—depending on the starting point—during a rehearsal process within an ensemble. The role of aural awareness as a standby mode therefore implies that the ensembles are "standby" for handling different kinds of problems, and that being standby is very much about orienting oneself in the musical landscape. This suggests that the aural awareness of different ensembles and different ensemble members' might be "standby" in different ways. Their aural awareness thus can, and must, be directed to different aspects of the music and the musical performance during a rehearsal or a rehearsal process.

9.2.2 Aural awareness as basis for negotiation

The role of aural awareness as "basis for negotiation" describes how the ensemble members are aurally aware *by* their sharing of ideas and knowledge. In accordance with my definition of aural awareness in ensemble rehearsals, this happens by their sharing of ideas from their mind's ear and their sharing of available knowledge resources. Aural awareness as a basis for negotiation therefore means that the ensembles *conceptualize* problems and *suggest problem-solving actions* based on their aural awareness, with the purpose of improving their playing. A question to be raised in this respect is *whose* aural awareness is creating the basis for negotiation, is it that of individual ensemble members, or of the ensemble as a whole?

In chapter 3, I argued that available knowledge resources can be collective as well as personal, and that "it is in the intersection between the resources available in the institutional practice and the personal knowledge the participants bring to the practice that the […] work gets done through social interaction" (Børte, 2011, p. 56). Hence, the question of who actually lays the foundation for ensemble negotiations may go both ways. In the analysis of the in-depth episodes in Part II, this was exemplified several times in the ensembles' construction of a Joint Problem Space. Very often, a negotiation was started by one ensemble member's comment about what should be improved. One interpretation of this is to credit the individual ensemble member for being aurally aware, to be standby. However, this member's comment may or may not be taken up by the ensemble. If it is not taken up, the individual ensemble member's aural observation has not functioned as a basis for negotiation, even though he tried to share it. In order for aural awareness to become a basis for negotiation, the

individual ensemble members' sharing of ideas and knowledge needs to be "accepted" into a Joint Problem Space.

This point is also underscored by the two-dimensional table (8.2.1), which presents four ways of negotiating aural awareness in ensemble rehearsals. The table shows that aural awareness can manifest itself in very different ways, and thus form different foundations for negotiation. As shown in the table, this is influenced by the degree of collaboration and the degree of shared tools. In the "expert" and "personal" negotiations, aural awareness does not form a useful basis for negotiation, because the individual ensemble member does not share his or hers ideas and knowledge in a way that encourages collaboration. However, in the "complete" and "incomplete" negotiations, the ensemble members share enough ideas to encourage collaboration, and aural awareness then becomes a collective matter; this, in turn, means that aural awareness can be a basis for negotiation. What differentiates the complete from the incomplete negotiations is the degree to which the ensembles manage to accept knowledge into their problem-solving processes, and whether they manage to share this knowledge as tools.

9.2.3 Aural awareness as preparation

The role of aural awareness as "preparation" concerns the way each ensemble member is aurally aware *before* and *between* the collective ensemble rehearsals. This also includes individual as well as collective aspects. Although I asked the students specifically about their aural awareness when they were practicing alone, their answers all showed that in their private practice they take into consideration, in some way, the fact that they are part of an ensemble performance, playing a chamber music piece. Individual practice as preparation for a collective ensemble rehearsal implies that one is aurally aware in a way that "includes" the rest of the ensemble in the mind's ear while rehearsing alone; one is somehow aware of the musical whole, in which one's own part is only one out of several. This concurs with Pratt's (1998) concept of "imaging interpretation," referring to how one can prepare interpretation of the music before actually hearing it. Rehearsing alone then, one might prepare interpretative ideas that become basis for negotiation in the meeting with the other ensemble musicians. It also concurs with the sociocultural idea that even when an individual sits in "solitude," he or she is "socioculturally situated" (Wertsch, 1998, p.

109). Thus, aural awareness as preparation does have collective, as well as individual, aspects.

As described in Part II, the string quartet discussed the issue of whether or not it was useful to practice intonation alone. The violist underlined the importance of practicing intonation alone, because "it is difficult to hear when playing as an ensemble, whether it is you or someone else [playing out of tune]." On the other hand, one of the violinists did not like to practice intonation alone, because she claimed, "it will sound completely out of tune" when returning to the ensemble situation; however, she did like to practice rhythm alone. Both take into consideration that intonation is particularly challenging when playing with others. One of the members of the piano trio mentioned both intonation and rhythm as something she would rehearse alone, because, she argued, it is easier to hear oneself and what one is doing when practicing alone.

Two members of the clarinet trio mentioned recordings as an important part of their individual preparation, and it seemed as if the purpose for them both was to become more aurally aware of the entirety of the piece. The different approaches were to play along with a recording, or simply to listen to a recording. The importance of recordings was also mentioned by the members of the piano trio; recordings were used to get a sense of the whole and to collect interpretative ideas for their own performance. Furthermore, the pianists in the clarinet trio and the piano trio both said they often sang the other parts when playing their own part, in order to become more aurally aware of the entirety of the piece.

All these descriptions emphasize that aural awareness is part of the preparations ensemble members make before and between the collective ensemble rehearsals. Thus, it is interesting to note that the clarinet trio emphasized that they would like to improve the ways in which they prepare for the ensemble rehearsals, for example the cellist suggested that each ensemble member should ideally go over the score and look at which functions one has in different chords before the rehearsals. I believe such an overview of the score could benefit the ensembles' problem-solving processes, and perhaps also the time used on problem-solving.

9.3 The characteristics of aural awareness in ensemble rehearsals

The second part of this study's twofold aim was to understand the characteristics of aural awareness in ensemble rehearsals. I identified three characteristics: aural awareness as "craftsmanship," aural awareness as "scholarship," and aural awareness as "musicianship." These characteristics constitute the "field of knowledge" within the defined Aural Awareness Space. Furthermore, they concur with the different forms of knowledge described in chapter 3: practical, theoretical, and acquaintance knowledge, respectively.

From an ideological perspective, it is interesting that the present study found all these three different forms of knowledge. This differs from the way the knowledge base in the subject area of aural training in higher music education is often characterized. As discussed in 2.1.2, Pratt (1998), for example, has described aural training courses as having a "one-sided focus on identifying pitches and durations" (p. 2). I also referred to Ilomäki (2013), who suggested "a need to broaden traditional notions of what counts as aural skills" (p. 132). These comments give evidence of, perhaps, a too narrow view of what aural training, and also aural awareness, are and can be. In the present thesis, my task as the reflexive researcher is primarily to point this out. However, the need for discussing this ideological issue was underscored by a question raised in one of the focus group interviews. The pianist in the piano trio asked where to draw the line between aural awareness in a "traditional sense" (e.g. having to do with intonation, rhythms, and so on) and imagination: is picturing the character of the music a kind of aural awareness? With this question, she raised the issue of what kinds of knowledge dimensions one may include in the concept of "aural awareness in ensemble rehearsals." As *one* answer to the pianist's question, I would say that the three characteristics of aural awareness found in the present study indeed support a wide and inclusive understanding, which means that picturing the character of the music is included in the thesis' conclusion of what aural awareness in ensemble rehearsals can be. This finding calls into question what an aural knowledge base really is, and in doing so it answers Ilomäki's (2013) call for a broadening of the traditional notions of what counts as aural skills.

9.3.1 Aural awareness as craftsmanship

The characterization of aural awareness in ensemble rehearsals as "craftsmanship" is based on the two first categories of shared tools identified in chapter 8: activity tools and strategic tools. The activity tools were described as actions, either explicitly introduced into the problem-solving process, or belonging implicitly to the ensembles' ongoing stream of communication. The aim of activity tools was to improve the current listening condition, or to provide a better ground for further listening. Strategic tools were used to reflect on problem-solving actions: creating new points of reference or changing the way of working on a problem. Hence, the strategic tools were characterized by verbal articulation and explicit mediation, as well as the implementation of an action plan.

The emphasis on action and concrete problem-solving within the activity and strategic tools suggests that *practical* knowledge is prominent. The ensembles are concerned with solving a problem hands-on, and they do this through concrete actions (e.g. tuning instruments, knocking the pulse, comparing G-sharps, and subdividing). Their aural awareness has a supportive function, as it plays a role in the identification and conceptualization phases of a problem, and is also drawn upon in suggesting problem-solving actions; finally, in several instances it was part of the problem-solving action itself. In order to underline the focus on practical use of knowledge within the craftsmanship category, I quote one of the participants: "Aural awareness is about using the knowledge you possess, with your ears" (Interview B, p. 9, my translation).

9.3.2 Aural awareness as scholarship

The characterization of aural awareness in ensemble rehearsals as "scholarship" is based on the next two categories of shared tools: analytical tools and conceptual tools. The analytical tools were described as providing more information about a problem, and hence contributing to defining a "shared conceptual space" (Roschelle & Teasley, 1995). The conceptual tools were described as mediating the verbal communication within the ensembles, and contributed to a shared understanding of the problems they were describing. Some analytical tools were represented by an action articulation mode, while most of the analytical and conceptual tools were represented by a verbal articulation mode. This means that the analytical or conceptual tools made extensive use of

professional terms, in order to describe what they heard, or simply to raise a topic for discussion.

The emphasis on verbal communication within the analytical and conceptual tools suggests that *theoretical* knowledge is prominent. The ensembles are concerned about how to define or understand a problem, and they do it by seeking and utilizing different kinds of information (e.g. consult the full score, and use the professional terms from the score). Their aural awareness has a supportive function by playing a role in identification and conceptualization phases. In order to underline the focus on theoretical knowledge within the scholarship-category, I quote one of the participants when answering my question of where their knowledge "comes from": "Something [comes] from 'composition/arrangement'. […] I was sure that I would never use anything [from that course] again, but now I'm remembering those lessons […] It's okay to analyze sometimes" (Interview C, p. 16, my translation).

9.3.3 Aural awareness as musicianship

The characterization of aural awareness in ensemble rehearsals as "musicianship" is based on the final two categories of shared tools: interpretative tools and performing tools. The interpretative tools were described as including everyday language and professional terms, as well as metaphors, used in order to decide how to play a phrase or describe the character of the music verbally. Looking back at the literature review, this is similar to Seddon and Biasutti's (2009) category of "verbal collaboration," which included discussions regarding possible creative changes—changes in interpretation were discussed, developed, and implemented (p. 126). The performing tools were instances when the ensemble members shared ideas from the mind's ear through musical performance, by singing and playing. This is similar to another of Seddon an Biasutti's (2009) categories: "non-verbal instruction," in which the musicians in their study communicated through something they labeled as "aural demonstrations," exemplified by the players demonstrating to each other how a specific part should be played (p. 127).

The interpretative and the performing tools have in common that they are strongly connected to the performance of the music, and that the communication is characterized by each individual ensemble member's personal knowledge resources, experiences, or opinions, such as the verbal sharing of interpretative suggestions. They also have in common that intuition seems to

play an important part of how they negotiate aural awareness. The actions that include singing or playing show how intuition is communicated through music itself. These characteristics suggests that *acquaintance knowledge* is prominent, because the ensemble members are expressing to each other that they know something about how *this* music should be interpreted, or how *this* phrase should sound, and that this is better explained through musical performance than in words. Therefore, in order to underline the focus on acquaintance knowledge within the musicianship category, I quote all three ensembles in how they described musical intuition:

> *[Intuition] is what you feel like, how you feel to play […] it's something inside you, I guess (Interview A, p. 15, my translation).*
>
> *One feels the music in a way, more than one is thinking it (Interview B, p. 22, my translation).*
>
> *How one feels the music, or what is going to happen in the music, so that one is sometimes feeling 'this is wrong' or 'we have to play more intense' (Interview C, p. 8, my translation).*

9.4 Awareness and automaticity

In chapter 5, the within-case display of the string quartet, I dwelled upon the cellist's description of their changing aural awareness becoming "automatic" after rehearsing a piece for a while. I then argued that the word "automatic" represents an important point about where awareness stops and automaticity begins. This pair of terms—"awareness and automaticity"—is used in research on reading and dyslexia (see Tønnessen, 1999), and I borrow this collocation from him in this section, in order to problematize the string-quartet cellist's belief that their aural awareness becomes automatic.

One explanation of the cellist's statement might be that aural awareness has an end point: there comes a point in the rehearsals when there is no longer a "need" to be attentive, to share ideas from the mind's ear, and to utilize available knowledge resources. Tønnessen (1999) describes how too much awareness can "be a hinder when we want to perform a simple and well-practiced task," and he calls an exaggerated focus on awareness the "*intellectualistic fallacy*" (p. 93). This might be what the cellist meant—that at some point the aural awareness is not needed as much as in the beginning of the rehearsal process. On the other

hand, the string quartet seemed to be aurally aware in the early stages of a rehearsal process, which is in line with what Tønnessen (1999) writes about too much automaticity, which can "be a hinder when we want to perform a new and complicated task." He calls an exaggerated emphasis on automaticity the "*mechanistic fallacy*" (p. 93).

Translating this to aural awareness in ensemble rehearsals, this would mean that one should consider that it might be possible to become "too aware," and when this point is reached, the ensemble players might feel like they have transcended into automaticity. In the introductory discussion about "rehearsal awareness" and "concert awareness," I made it clear that these are different kinds of awareness, and that this thesis concentrates on the rehearsal kind. Based on the findings in this thesis I would now say that a majority of what the ensembles are focally aware of in their rehearsals *needs* to become subsidiary in a concert. For example, subdividing a rhythm might have focal awareness in a rehearsal, but by the concert, this should have withdrawn into subsidiary awareness. One could say that the process of internalizing the subdivision of a rhythm should lead to automaticity, and that if one is still subdividing in the final performance, one might have become—or remained—too aware.

Based on the variety of shared tools identified in this thesis, and the characteristics of the complete negotiations in particular, I conclude that, rather than standing in binary opposition to awareness, automaticity is formed *through* awareness. Unlike, for example, Polanyi's (1958) argument that bicycling and swimming might be performed without the specific rules being known to the performer, I argue that aural awareness and the sharing of knowledge that comes with aural awareness, is crucial in the ensembles' collaborative efforts to improve their playing.

10 Concluding remarks

10.1 Summary of the findings

This thesis has explored the roles and characteristics of aural awareness in ensemble rehearsals, within a sociocultural framework. Student ensembles' collaboration, negotiations, problem-solving and sharing of knowledge have been important concepts when trying to understand how aural awareness influences the ensembles' musical performances. The comprehensive research problem was: In what ways are undergraduate music students aurally aware during ensemble rehearsals, and how does their aural awareness influence their collaborative efforts to improve their playing? Two research questions refined this problem: (i) how is aural awareness part of the ensembles' problem-solving processes, and (ii) what kinds of tools are shared in order to improve the ensembles' playing, and how?

Six kinds of tools were shared in the ensembles: activity, strategic, analytical, conceptual, interpretative, and performing tools. Within these categories of tools, aural awareness influenced the ensembles' playing in different ways. *Activity tools* expanded the ensembles' aural awareness, by providing a better ground for further listening, or improving the current listening conditions. *Strategic tools* pointed the ensembles' aural awareness in new directions, by creating new points of reference, or finding other ways of working on a problem. *Analytical tools* directed the ensembles' aural awareness to reading the music, or trying to understand or interpret something from the score. *Conceptual tools* helped the ensembles define what their aural awareness was

directed to, or helped them explaining how one or several ensemble members heard something in their mind's ears. *Interpretative tools* communicated interpretative ideas from the mind's ear of one ensemble member to the other ensemble members, verbally. *Performing tools* helped explain an interpretative idea, or understand a musical part, through a musical performance. Both the interpretative and performing tools expanded the ensembles' aural awareness of interpretative options in the music.

It is therefore clear that aural awareness was part of the ensembles' problem-solving processes in different ways. The most prominent distinction was whether aural awareness was used in problem-solving in a collaborative or cooperative way. During collaborative problem-solving, the ensemble members shared ideas and opinions in a way that I would call "collective aural awareness." During cooperation, the ensemble members shared their ideas and opinions to a much lesser degree, in a way that I would call "individual aural awareness."

The comprehensive problem was: in what ways are undergraduate students aurally aware during ensemble rehearsals, and how does their aural awareness influence their collaborative efforts to improve their playing? From the present study, I have found that the students are first and foremost aurally aware through their negotiations of problem-solving. Furthermore, I have found that there are different ways of negotiating aural awareness in ensemble rehearsals, described as expert, complete, incomplete, and personal negotiations. *Expert negotiations* showed several shared tools and cooperation, promoting individual aural awareness. *Complete negotiations* showed several shared tools and collaboration, promoting collective aural awareness. *Incomplete negotiations* showed collaboration and no or few shared tools, promoting collective aural awareness, but with less influence on the playing than in complete negotiations. *Personal negotiations* showed no or few shared tools and cooperation, promoting individual aural awareness, but with less influence on the playing than in the expert negotiations. The research problem focused specifically on how the ensembles' aural awareness influenced their collaborative efforts to improve their playing. With that in mind, the complete negotiations, with their collaboration and several shared tools, seem to fulfill the struggle for a better performance in the best way.

The aim of this thesis was to understand the roles and characteristics of aural awareness in ensemble rehearsals. Within a suggested Aural Awareness Space, three roles have been defined as the ensembles' field of negotiations: (i) aural

awareness as standby, (ii) aural awareness as basis for negotiation, and (iii) aural awareness as preparation. Within the same Aural Awareness Space, three characteristics of aural awareness in ensemble rehearsals have been defined as the ensembles' field of knowledge: (i) aural awareness as craftsmanship, (ii) aural awareness as scholarship, and (iii) aural awareness as musicianship. Different combinations of these roles and characteristics will form different Aural Awareness Spaces within different ensembles and different problem-solving processes—and hence lead to different performance outcomes in ensembles' efforts to improve their playing. I suggest that, the degree to which an ensemble manages to *share* ideas and knowledge seems to be crucial in this respect.

10.2 Educational contributions

This thesis' suggestions of educational contributions are presented as points for further discussion within the subject area of chamber music and the subject area of aural training, respectively. In order to bridge aural training and chamber music, I believe one has to take the regular courses as points of departure, and from there, one can discuss how the subject areas can meet. To meet halfway might be a good place to begin.

10.2.1 Chamber music

My proposed contributions to the chamber music subject in higher music education have arisen out of the findings from the focus group interviews, in which the ensembles shared some 'meta-thoughts' about their participation in this research project, and about their chamber music practice as such.

It was a common opinion among the ensembles that watching the video excerpts from the rehearsals was very informative—they learned a lot about themselves. For example, the clarinet trio (case B), suggested that they could be better prepared for their ensemble rehearsals, in particular in terms of having a better overview of how each member's own part related to the score. The piano trio (case C) noted how they communicated, and how they were sometimes disturbing each other's peace to work, by playing when the others were working on something. These experiences are in line with one of the strategies for ensemble practice suggested by Davidson and King (2004), that "players

should reflect over the effectiveness of their rehearsal methods and ways of communicating" (p. 120). The students also emphasized the positive experience of participating in the focus group interview as such. They claimed to learn a lot from discussing the topics with me and with each other. From a meta-perspective one could say they seemed to become more aware of their aural awareness by participating in the focus group interviews. A third interesting response was the comment from the string quartet (case A) that they might wish for more guidance in how actually to rehearse chamber music together. I raised the issue of guiding the students in how to rehearse in 2.2.1, where I referred to a compendium the students at the Norwegian Academy of Music (NAM) receive as they start their chamber music course (Sandbakken, 2003). It seems, though, as if there is room for further guidance in this area.

As a point for further discussion, I would suggest that all these ideas are worth consideration for inclusion in the existing chamber music courses. It might then begin to look like the elective chamber music course at NAM, mentioned in 2.1.2. This elective chamber music course already includes student discussions about the rehearsal processes, which might be somewhat similar to the function that the focus group interview had in the present study. In addition, video recording some of the rehearsals in the regular chamber music course would be useful, as would the opportunity for ensembles to discuss rehearsal practice with a teacher. Together, the general discussions, and the discussions about the video recordings, would go some way to meeting the students' wish for more guidance in the regular chamber music course. One could also transfer the idea of a compound teacher team from the elective course to the regular course.

10.2.2 Aural training

My proposed contributions to the aural training subject in higher music education have arisen out of the findings from the focus group interviews, as well as from the discussion in chapter 9 about the different characteristics of aural awareness in ensemble rehearsals.

The present study took as a starting point that ensemble rehearsals are collaborative in nature, and that exploring aural awareness in ensemble rehearsals had to take this into consideration. Hence, this thesis sheds light specifically on the ways aural awareness can manifest itself in a collective learning situation. It might be a paradox, in this context, that aural training courses are primarily concerned with the enhancement of aural skills and aural awareness at the level

of the individual. I would therefore suggest that when discussing the connections between aural training and performance, one should also consider closely *the kinds of* performance arenas, and what is characteristic about them. Are there, perhaps, differences between the ways music students are aurally aware when they play in the orchestra as opposed to playing with an accompanist? If so, how do we meet these challenges in aural training education?

Furthermore, the present thesis concludes that practical, theoretical, and acquaintance knowledge is at play in the ensembles' shared tools, and thus, that all these three forms of knowledge characterize aural awareness in ensemble rehearsals. As discussed in 9.3, the pianist in the piano trio (case C) asked whether picturing the character of the music could be considered a way of being aurally aware. She addressed the question of where to draw the line between aural awareness in a 'traditional sense' (e.g. having to do with intonation, rhythms, and so on) and interpretation. As a point for further discussion I would therefore suggest that academic environments for aural training pedagogy, at NAM and in other higher music education institutions, continue (or start) to re-think what kinds of knowledge dimensions one should include in the subject area of aural training, keeping in mind that we are educating performing musicians. This, in turn, should also lead to new discussions about the contents and learning outcomes of aural training courses. One might need to address questions such as whether we need to expand the knowledge base in aural training, or what it would imply to include aspects of performance in the teaching of aural training.

10.3 Theoretical contributions

A principle theoretical contribution of this thesis is the way it has used a sociocultural perspective to challenge the assumption that aural awareness is merely an individual phenomenon, and, in turn, the location of aural awareness within the collective learning situation of ensemble rehearsals. This has resulted in a definition of "aural awareness in ensemble rehearsal" that offers new insight both to aural awareness and to the process of student ensemble rehearsing. A definition of "aural awareness in ensemble rehearsal," must take into account a particular characteristic of chamber music ensembles: that aural ideas and knowledge must be shared in order to be negotiated. The collaborative dimension of aural awareness is the crucial component in this definition. In this

respect, it differs significantly from other definitions of the individual dimensions of aural awareness. I therefore regard this definition as such to be a theoretical contribution, primarily to the subject areas of musical listening and aural training pedagogy, but also to the subject area of ensemble practice.

Another potential theoretical contribution arising from the present thesis is the discussions of how shared tools are articulated. By combining the theoretical understandings of the concept "tool" from Vygotsky (1978, 1981) and Wertsch (1998) with Grimen's (2008) understanding of how knowledge can be articulated and Wertsch's (2007) concepts of explicit and implicit mediation, six kinds of tools appeared. This typology explicitly takes into account non-verbal dimensions of communication, such as sharing of ideas through musical performance.

10.4 Contributions to the research field

The thesis might also contribute to the field of research into higher music education, by helping to establish a research field devoted to "aural training pedagogy in musical practice." As the literature review showed, there has been little research into this matter. However, I believe that the curricular demands of an even more interdisciplinary mentality will only increase as time passes. Meeting such demands with relevant research studies might be a useful supplement to other forms of educational development strategies. This being said, the theoretical framework of studies such as the present one—on the border area of listening, musical practice, and pedagogic theory—is still open to discussion and further development. This combination is not yet widespread, which means that researchers who combine these subject areas should devote time to developing and explaining this research path. From a research point of view, my study can be seen as part of an epistemological shift within the subject area of aural training pedagogy: challenging traditional cognitive and individual perspectives of knowledge formation, as well as challenging the view of aural training as something separate from musical practice.

10.5 Retrospective thoughts and future-orientation

10.5.1 The research study in perspective

In this section, I take a retrospective look at some methodological aspects of this research study, by discussing the research design and the quality of the data.

If I were to design the study again, and had the opportunity to expand the study without concern for increased amount of data, I would have included the ensembles' chamber music teachers as participants. With the ensembles' permission, I would have liked to show their teachers excerpts from the video-recorded rehearsals, and to discuss with them the ensembles' collaboration, negotiations, problem-solving actions, and aural awareness. I would also have asked them how they believe the chamber music subject should develop in the future, and how complementary disciplines such as aural training, and performance subjects such as ensemble practice, can find collaborative arenas.

I might also have considered conducting individual interviews with the participants, possibly with stimulated recall of the video-recorded rehearsals, in addition to the video observations and the focus group interviews. These might have contributed to a further triangulation of the data, in particular as a way of getting deeper insight into how each ensemble member experiences aural awareness in ensemble rehearsals. Individual interviews could thus have shed more light on the "intramental" (Vygotsky, 1981; Wertsch, 1998) aspects of the ensemble members' aural awareness, while the design chosen for the present thesis has rather emphasized the "intermental" aural awareness-relations within the ensembles.

There are two further methodological issues I would have liked the opportunity to improve. One is the DVD-instructions (see 4.2.2) the participants received before the focus group interviews. With what I now know about aural awareness in ensemble rehearsals, I would be equipped to ask more precise questions, and to guide the students' viewing of the video excerpts in a better way. At the time, I was unsure myself how the data might inform the study. The other issue I would want to improve is the planning of the video observations. If possible, I would now try to know more about the ensembles' rehearsal schedule for the coming half year, and to make more concrete plans with each ensemble, so that the video observations would become a bit less spontaneous, and with

smaller gaps between them. On the other hand, the present study, with its gaps between some of the video observations, is a good example of how real-life might influence and change methodologically ideal plans.

I turn now to the quality of the collected data, focusing on two aspects concerning the empirical conditions for the study. One condition that may have influenced the trustworthiness of the findings is that ensemble members who are anxious may not be very attentive listeners. I have no indications that the participants in my study were uncomfortable, but the possibility must be taken into consideration. It was a colleague of mine, a chamber music teacher, who mentioned this psychological aspect to me, and he emphasized how the ability to listen attentively may be weakened if one does not know the part well enough, or one is afraid to hurt the feelings of another ensemble member, or is anxious in general. In the contrary case, being in a flow might make an ensemble member an exceptionally good listener, he said. In the end, I have to trust the statements I have from the focus group interviews, that the participants in this study claimed they were comfortable.

Another aspect that might have affected the trustworthiness of the findings is that the ensembles may have been working on a repertoire with a (too) high degree of technical difficulty. If that means the students were concentrating more on their technique than on their listening, it could mean they were less attentive to the performance of the whole ensemble. This possibility is important to keep in mind, but difficult to discern. I had no indications that this was a problem in the present study.

10.5.2 Additional ethical remarks

The ethical considerations presented in the chapter on methodology mainly concerned how to treat the data with confidentiality, how to behave in a professional manner in relation to the participants, and how to be respectful when presenting the findings. In this final chapter, I would like to raise some further ethical questions: How can the findings of this thesis be used—or misused? What outcomes would I consider positive and what would I consider negative? Behind these questions lies the assumption that once a researcher has published her work, "anything"—or nothing—might happen in terms of how the research findings are utilized.

What I would regard as positive outcomes would be for the findings of the present thesis to be used with the purpose of re-thinking the knowledge bases

of aural training and chamber music in higher music education, or of trying out new teaching ideas in the regular aural training or chamber music courses. Another positive outcome would be if higher music education institutions initiated a general discussion of the role of all complementary subjects in performing studies. In particular they might discuss how one should balance theory and practice, and to what degree one should emphasize interdisciplinarity or multidisciplinarity across complementary and performing subjects. It might be fruitful for the students' learning outcome to focus on topics that "overlap" to a greater degree, such as aural awareness in ensemble rehearsals.

A potential negative outcome, however, is the danger that this mixing or overlapping of areas might lead to confusion and uncertainty about roles and responsibility. Thus, although this thesis takes multidisciplinarity as a starting point; the matter of how to maintain the distinctive characters of each complementary subject, such as aural training or composition/arrangement, is not addressed here.

I can also foresee another potential negative outcome: that instead of the findings being used in a constructive way, opening up a space for increased dialogue between teachers within aural training/theory and performing, the findings might be used to define and seize power.[57] On the one hand, one might imagine theory teachers wanting a greater role in performance teaching, and also wanting to define or change the knowledge base within the subject area of performance. On the other hand, one could imagine performance teachers rejecting impact from the theory subjects into their side of the field, or at least wanting to guide the ensemble students in theory themselves, in order to maintain their position of power as the performance experts. If the teachers take these factional positions, the thesis' mission of building a bridge would be likely to fail.

The remarks I have made above represent only a flight of thoughts, and it is my hope that the thesis will lead to more positive outcomes than negative ones. My main point, however, is that readers and researcher share a responsibility for administering research findings properly. To "make use of" research findings carries ethical responsibilities—as well as dilemmas.

57 "Power" in this context refers to Alvesson and Sköldberg (2009), who consider power to be one of the topics that should be addressed within the level of "critical interpretation."

10.5.3 Suggestions for future research

I believe we are only in the beginning of researching the bridge between aural awareness and musical practice. The research effort can therefore be directed to students, as much as to professionals, to other musical practices, or to the development of curricular courses. All kinds of research projects are "needed," and I offer here some suggestions for future research.

One might do a longitudinal study with approximately the same research design as the present study. The idea would be to include a larger sample of ensembles over an extended period of time—possibly following some ensembles for more than one year. It would then be interesting to follow up on those of the students who, after their studies, started working as professional chamber musicians as part of their career. What are their thoughts after having completed their education? How are they aurally aware as professionals? Would they have wanted something about the chamber music courses or the aural training courses to be different, in retrospect?

Another fruitful direction might be to explore aural awareness in other musical practices (e.g. orchestra rehearsals), in order to broaden even further the potential definition and scope of aural awareness. One could also explore the aural awareness of participants with a different role (e.g. conductors). Instructing musical practice is indeed different from performing.

In order further to develop the curricular courses in higher music education, one could design, for example, action-oriented research projects within an interdisciplinary framework. This could be a collaborative project between a chamber music teacher and an aural training teacher, or collaborative projects with teachers within other subject areas.

In general, all these ideas are about strengthening the connection between a well-used pair of terms: theory and practice—and more specifically making building blocks for the *bridge* between aural awareness and musical performance.

10.6 Tuning out

Ensemble musicians are at once collaborative performers and collaborative listeners, in the way that the performance depends on every ensemble member, and in the way that the ensemble members are each other's ears during

rehearsals. The cellist in the clarinet trio pointed out how difficult it is to do just this:

> Cellist: How can one […] listen to the others at the same time as playing oneself […] I don't get that. No matter how much I practice, I can't hear myself as an objective listener sitting over there, and myself practicing here, I cannot do that. (Interview B, p. 24–25, my translation).

The cellist is exploring the question of how to be an "objective" listener. I will not begin here a discussion of what that means. I rather leave the reader to think about the complexity of ensemble members' listening, and how attentiveness can be pulled in different directions.

This thesis has shown that aural awareness can manifest itself in many ways in the rehearsals of three undergraduate ensembles. The crucial point is that aural awareness can, indeed must, be shared in order to influence the ensembles' collaborative efforts to improve their playing. As the thesis is tuning out, I leave the reader with two quotations, each of which will shed some light on one part of the thesis' title. Together they form my concluding remarks:

Aural awareness

> Even if you have a good ear, it should never be taken for granted; it must always be kept alert and developed (Blum, 1986, p. 31).

...in ensemble rehearsals

> Collaboration does not just happen because individuals are co-present; individuals must make a conscious, continued effort to coordinate their language and activity with respect to shared knowledge (Roschelle & Teasley, 1995, p. 94).

Appendices

1 Scandinavian quotations in original
2 DVD instructions (in Norwegian and English)
3 E-mail with an invitation to participate (in Norwegian and English)
4 Interview guide (in Norwegian and English)
5 Approval from NSD (in Norwegian)
6 Information and declaration of consent (in Norwegian and English)
7 Promise of confidentiality (in Norwegian and English)

Appendix 1: Scandinavian quotations in original

Chapter 1

1.2

I høyere musikkutdanning er det tradisjonelt sett studentenes hovedinstrumentlærere som underviser i kammermusikk. Erfaringene viser at musikkteori, det være seg kunnskaper i musikkhistorie, ulike satsteknikker eller gehør, i liten grad integreres som en del av den undervisningen som gis i kammermusikk. Det blir derfor studentene selv som må stå for integreringen av de kunnskapene og ferdighetene de har tilegnet seg i de ulike fagene (NAM, 2007, p. 4).

Chapter 2

2.1.1

Kammermusikken utgjør i dag en viktig del av konsertrepertoaret og står dermed sentralt I mange musikeres yrkesutøvelse. Ved de fleste høyere musikkutdanningsinstitusjoner tilbys derfor studentene undervisning i kammermusikk (NAM, 2007, p. 4).

2.1.2

Fra å undervise om auditive strategier gjennom laboratoriepreget ferdighetstrening, kan jeg nå følge prosessen hele veien fram til det klingende resultatet. Det føles som om jeg tidligere hadde ansvar for å smøre kakeformer, mens jeg nå blander ingredienser, steker og pynter kaken—og til slutt får nyte resultatet! Det er utrolig inspirerende å undervise på denne måten! (NAM, 2007, p. 13).

2.2.1

Gjennom arbeidet med emnet skal studenten

- utvikle evnen til å formidle kammermusikk på en interessant, personlig og stilsikker måte
- tilegne seg innsikt i interpretatoriske særegenheter som er knyttet til ulike besetninger
- utvikle konstruktive og kreative holdninger til samarbeid og prøveteknikk i en kammermusikkgruppe
- tilegne seg et bredt repertoar av kammermusikk
- få konserterfaring som kammermusiker

(NAM, 2008; 2010).

Chapter 3

3.2.2
Sett fra et sosiokulturelt perspektiv er det imidlertid åpenbart at de kunnskapene og ferdighetene som utgjør samfunnsmessige erfaringer, ikke kommer innenfra individet—de er blitt utviklet i samfunnet og mellom mennesker […] I et sosiokulturelt perspektiv, og gjennom dets fokus på hvordan mennesker tilegner seg samfunnsmessige erfaringer, kommer dermed læring før utvikling. Å lære er å tilgodegjøre seg deler av samfunnets samlede kunnskaper og ferdigheter […] (Säljö, 2006, p. 22).

3.2.4
For en musiker vil eksempelvis både stilfortrolighet og førstehåndserfaringer frau like sammensetninger av musikkens elementer utgjøre et viktig repertoar for å kunne handle adekvat og fungere i den aktuelle konteksten. Det er også fortrolighetskunnskap som opererer når en musikkutøver kjenner igjen trekk ved et musikkverk på bakgrunn av tidligere møter med stilarten, eller når han/hun skjønner hvor en medspiller I ensemble vil med et initiativ, og kan følge opp dette med endringer i tempo eller dynamikk (Nerland, 2004, p. 49).

3.3.3
Et verk er per definisjon avhengig av interpretasjon, framføring og tolkning. Det er først og fremst i denne forstand at partituret ikke utgjør noe sluttpunkt. På musikkens område har ordet "interpretasjon" en fin dobbeltbetydning. Det betyr spilling eller framføring, og det betyr tolkning, analytisk utlegning eller refleksjon i begreper. Vi har faktisk ingen tilgang til et verk uavhengig av en eller annen interpretasjon av det. Man må enten spiller, høre, lese eller forestille seg det. Verket fremstår alltid i en eller annen *versjon*, og da er det alltid prinsipielt mulig å forestille seg en *annen* versjon (Gulbrandsen, 2002, pp. 10-11).

Chapter 4

4.1
Forskningsmaterialet stammer dermed fra menneskelige praksiser som ville funnet sted uavhengig av forskerens tilstedeværelse […] (Kamsvåg, 2011, p. 73).

4.2.1
Når man arbejder med kamera i felten, bliver der bestandigt sat fokus på ens tilstedeværelse, på ens gøren og laden, på hele ens forehavende, i højre grad end når antropologen tager noter (Møhl, 2003, p. 166).

Ved at observere praksis ved hjælp af video bliver det muligt at dokumentere faktiske hændelser og støtte hukommelsen. Videoobservation giver også mulighed for at "se" sammenhænge mellem handlinger, bevægelse og udtryk, som ellers er skjult for det blotte øje. […] Ved at anvende video i observationsprocessen er det blevet mulig at indsamle materiale om en given praksis uden på forhånd at afgrænse problemstillingen (Rønholt, Holgersen, Fink-Jensen, & Nielsen, 2003, pp. 15-17).

Appendix 2: DVD instructions (in Norwegian and English)

Norwegian:

Hei!

Her er en CD med noen videoklipp fra de kammermusikkøvelsene jeg har observert. Siden det er en CD må den ses på en PC. NB! Videoen bør ses i lite format, i full screen blir dere litt utydelige ☺

Videoklipp 1 og 2) [Dato, verk, sats nummer]

Videoklipp 3 og 4) [Dato, verk, sats nummer]

Videoklipp 5 og 6) [Dato, verk, sats nummer]

Det tar ca. 20 minutter å se videoen. Det jeg ønsker at du skal gjøre før gruppeintervjuet er:

1. Se gjennom videoen. Legg merke til hvordan dere bruker gehøret for å løse musikalske problemstillinger.
2. Velg ut én situasjon der du enten
   a) synes dere bruker gehøret på en bra måte eller
   b) synes dere kunne brukt gehøret annerledes.
   Forklar hvorfor du valgte denne situasjonen. Notér hvilket videoklipp det er slik at vi kan se det sammen på gruppeintervjuet.
3. Se gjennom notene og tenk tilbake på *din egen* innøving av stykkene. Brukte du gehøret eller *ditt indre øre* i innøvingen? I så fall, hvordan? Hvordan vil du beskrive *ditt indre* øre*?*

Det er viktig å huske på at opptakene er gjort i øvingsprosessen og at dere tar videoklippene for det de er, nemlig øvelser. Når jeg har analysert opptakene har jeg sett etter er hva dere diskuterer, hvordan dere løser ulike musikalske problemstillinger og hvordan dere aktivt bruker gehøret. Jeg har altså ikke lagt vekt på instrumentale ferdigheter eller valg av tolkning.

Vel møtt til gruppeintervju [dato, klokkeslett, rom].

Vennlig hilsen Aslaug
[dato]

English:

Hi!

Here is a CD with some video excerpts from the chamber music rehearsals I have observed. Since it is a CD you must watch it on a computer. NB! The video should be seen in a small format; in full screen you all become a bit blurry ☺

Video excerpt 1 and 2) [Date, composition, movement]

Video excerpt 3 and 4) [Date, composition, movement]

Video excerpt 5 and 6) [Date, composition, movement]

It takes about 20 minutes to watch the video. This is what I want you to do before the group interview:

1. Watch the video. Notice how you and your fellow students use your aural skills and aural awareness to solve musical problems.
2. Choose a situation in which you think that you are either
   a) using your aural skills and aural awareness in a good way, or
   b) thinking that you could have used your aural skills and aural awareness differently
   Explain why you chose this situation. Notice what video excerpt this is, so that we can watch it together in the group interview.
3. Look at the music score and think about when you practiced it *alone*. Did you use your *inner ear* when you practiced? If so, how? How would you describe your *inner ear*?

It is important to remember that these recordings are done in the rehearsal process and that you take it for what it is, namely rehearsals. When I have analyzed the recordings I have been looking at what you are discussing, how you solve different musical problems, and how you use you aural awareness actively. I have not assessed your instrumental skills or your interpretations.

Welcome to the group interview [date, time, room number].

Best regards, Aslaug
[date]

Appendix 3: E-mail with an invitation to participate (in Norwegian and English)

Norwegian

Fra: Aslaug Louise Slette
Sendt: [dato]
Til: [navn]
Emne: Forskningsprosjekt gehør - LYST TIL Å DELTA?

Hei!

Jeg er stipendiat her på NMH og søker kammermusikkgrupper til mitt forskningsprosjekt om bruk av gehør på kammermusikkøvelser. Har funnet deres gruppe via kammermusikklisten på nettet og det ser ut til at dere oppfyller kriteriene, som er:

- at dere er 3-5 personer i gruppa
- at dere består av klassiske strykeinstrumenter og/eller blåseinstrumenter, eventuelt med piano/gitar
- at dere alle har hatt 1. år med gehørtrening, altså går i 2.-4. klasse

I tillegg er det et kriterium

- at dere har repertoaret klart og kan være med i prosjektet allerede fra [måned] denne høsten

HAR DERE LYST TIL Å DELTA I PROSJEKTET?

Det er ikke mye ekstraarbeid for dere. Dere bestemmer selv når dere har kammermusikkøvelse. Jeg kommer når det passer for dere, to eller tre ganger i løpet av høsten. Dere skal ikke gjøre noe annerledes når jeg kommer, bare gjennomføre en vanlig øvelse på ca. 1 time. Ønsker at første øvelse jeg observerer er ganske tidlig i innstuderingsfasen, muligens i starten/midten av [måned]? I tillegg blir det en gruppesamtale, der vi ser videoklipp og diskuterer kammermusikkøvelsene dere har hatt.

Ytterligere informasjon om prosjektet og personvern/konfidensialitet finner dere i vedlagte skriv.

For å melde dere på, send en e-post til [mailadresse] innen **[dato]**. Førstemann til mølla!

Vennlig hilsen
Aslaug Slette

Norges musikkhøgskole
Aslaug Louise Slette, stipendiat
Fagseksjon for musikkpedagogikk og musikkterapi
Tlf: [tlf.nummer]
Rom: [romnummer]
E-post: [e-postadresse]

English

From: Aslaug Louise Slette
Sent: [date]
To: [name]
Subject: Research project aural awareness—PARTICIPATE?

Hi!

I am a PhD fellow here at NAM, and I am looking for chamber music ensembles who would like to join my research project about how undergraduate students are aurally aware in ensemble rehearsals. I found your group in NAM's list of ensembles on the internet, and you seem to fulfill my criteria, which are:

- that your ensemble consists of 3-5 persons
- that your ensemble consists of classical string instruments and/or wind instruments, possibly with piano/guitar

- that you have all attended one year of aural training, that is, that you are in your second, third or fourth year

In addition, it is a criterion

- that you have your repertory ready, and that you can join the project already from [month] this fall

WOULD YOU LIKE TO JOIN THE PROJECT?

It is not much extra work. You decide when your ensemble rehearsals take place. I visit when you invite me, two or three times during the fall. You are not supposed to do anything differently than you usually do, just carry out a regular rehearsal of approximately an hour's duration. I would like the first rehearsal to be early in the rehearsal process, possibly in the beginning/middle of [month]? There will also be a group interview, in which we will look at video excerpts and discuss the ensemble rehearsals I have attended.

More information about the project, and confidentiality, is to be found in the enclosed letter.

For participation, send an e-mail to [e-mail address] before **[date]**. First come, first served!

Best regards,
Aslaug Slette

Norwegian Academy of Music
Aslaug Louise Slette, PhD fellow
Department of Music Pedagogy and Music Therapy
Tel: [telephone number]
Room: [room number]
E-post: [e-mail address]

Appendix 4: Interview guide (in Norwegian and English)

Norwegian: Fokusgruppeintervju med kammermusikkgrupper

TEMATIKK	UTDYPENDE SPØRSMÅL
ÅPNINGSSPØRSMÅL Erfaringer med videoopptakene	Hvordan har det vært å se på video av seg selv? Har dere gjort noe annerledes enn dere pleier fordi jeg har vært til stede og filmet øvelsene?
INTRODUKSJONS-SPØRSMÅL Refleksjoner rundt videoklipp fra kammermusikkøvelsene	Deltakernes selvvalgte videoklipp: Hvorfor har du valgt ut dette videoklippet?
OVERGANGSSPØRSMÅL Om å bruke gehøret (tavleaktivitet)	Hva mener dere det vil si å bruke gehøret?
NØKKELSPØRSMÅL Gehøret på kammermusikkøvelse	På hvilke måter har dere bruk for gehøret når dere spiller kammermusikk sammen? Bruker dere gehøret forskjellig om det er tidlig eller sent i øveprosessen? Bruker dere gehørmetoder for å løse musikalske problemstillinger? Hvordan bruker dere hverandre som veiledere?
Egenøving	Hvordan har dere brukt gehøret når dere har øvd inn deres egen stemme? Hvordan bruker dere det indre gehøret?
Musikalsk intuisjon	Føler dere at dere har en musikalsk intuisjon? Kan dere beskrive den intuisjonsfølelsen for meg? Hvordan bruker dere intuisjonen når dere spiller?
Nytteverdi	Hvordan kan en musiker dra nytte av et godt gehør? Hvilken nytteverdi har fagene gehørtrening og musikkteori for deres musikkutøving?

TEMATIKK	UTDYPENDE SPØRSMÅL
AVSLUTNINGSSPØRSMÅL	Er det noe mer dere har lyst til å si om tema? [Oppsummering] Gir det jeg sa nå et godt bilde av hva dere har fortalt meg i dag? Kommer dere på andre situasjoner der gehøret spiller en viktig rolle? Har dere noen råd som jeg bør ta med meg til neste intervju?

English: Focus group interview with chamber ensembles

TOPIC	ELABORATING QUESTIONS
OPENING QUESTIONS Experiences with the video recordings	What was is like watching yourself on video? Did you do things differently because I was there, video recording?
INTRODUCTORY QUESTIONS Reflections on the video excerpts from the ensemble rehearsals	Video excerpts chosen by the participants: Why did you choose this excerpt?
TRANSITION QUESTIONS About being aurally aware (activity)	What do you think it means to be aurally aware?
KEY QUESTIONS Aural awareness in ensemble rehearsals	In what ways are you aurally aware when you are playing chamber music together? Is your aural awareness different in early or late stages in the rehearsal process? Do you use strategies from aural training in order to solve musical problems? How do you use each other as peers?
Individual practice	In what ways were you aurally aware when practicing your own part? How do you use your mind's ears?

TOPIC	ELABORATING QUESTIONS
Musical intuition	Do you feel that you have got musical intuitions? Could you describe this intuitive feeling for me? How do you use your intuition when you are playing?
Utility value	How can a musician benefit from having a good musical ear? What kind of utility value do aural training and music theory have in your musical practice?
ENDING QUESTIONS	Something else you would like to share about the topic? [Summary] Did my summary cover what you have told me today? Are there other situations in which you think you aural awareness is useful? Any advice for my next focus group interview?

Appendix 5

Norsk samfunnsvitenskapelig datatjeneste AS
NORWEGIAN SOCIAL SCIENCE DATA SERVICES

Harald Hårfagres gate 29
N-5007 Bergen
Norway
Tel: +47-55 58 21 17
Fax: +47-55 58 96 50
nsd@nsd.uib.no
www.nsd.uib.no
Org.nr: 985 321 884

Aslaug Louise Slette
Norges musikkhøgskole
Slemdalsveien 11, P.B 5190 Majorstua
0302 OSLO

Vår dato: 16.11.2010 Vår ref: 25339 / 3 / JSL Deres dato: Deres ref:

KVITTERING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 22.10.2010. Meldingen gjelder prosjektet:

25339	*The musical Ear. Exploring the Interplay between Ensemble-playing and aural Awareness*
Behandlingsansvarlig	*Norges musikkhøgskole, ved institusjonens øverste leder*
Daglig ansvarlig	*Aslaug Louise Slette*

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, eventuelle kommentarer samt personopplysningsloven/-helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, http://www.nsd.uib.no/personvern/forsk_stud/skjema.html. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, http://www.nsd.uib.no/personvern/prosjektoversikt.jsp.

Personvernombudet vil ved prosjektets avslutning, 31.12.2013, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Bjørn Henrichsen

Juni Skjold Lexau

Kontaktperson: Juni Skjold Lexau tlf: 55 58 26 35
Vedlegg: Prosjektvurdering

Avdelingskontorer / District Offices:
OSLO: NSD, Universitetet i Oslo, Postboks 1055 Blindern, 0316 Oslo Tel: +47-22 85 52 11, nsd@uio.no
TRONDHEIM: NSD, Norges teknisk-naturvitenskapelige universitet, 7491 Trondheim Tel: +47-73 59 19 07, kyrre.svarva@svt.ntnu.no
TROMSØ: NSD, SVF, Universitetet i Tromsø, 9037 Tromsø Tel: +47-77 64 43 36, nsdmaa@sv.uit.no

Norsk samfunnsvitenskapelig datatjeneste AS
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Aslaug Louise Slette
Norges musikkhøgskole
Slemdalsveien 11, P.B 5190 Majorstua
0302 OSLO

Vår dato: 02.11.2011 Vår ref: 25339 JSL/RF Deres dato: Deres ref:

ENDRINGSMELDING

Vi viser til endringsmelding mottatt 21.10.2011 for prosjektet:

25339 *The musical Ear. Exploring the Interplay between Ensemble-playing and aural Awareness*

1. Vi har mottatt intervjuguide. Vi har ingen merknader til dette.
2. Vi har registrert at forsker vil observere og ta feltnotater når kammermusikkgruppene har undervisning med sin kammermusikklærer. Utvalg utvides da med 3 lærere.

Personvernombudet tilrår endringen, under forutsetning av at de nye situasjonene som nå skal observeres, er overførbare i forhold til tidligere innmeldte observasjonssituasjoner. Vi legger videre til grunn at kammermusikklærer og kammermusikkgruppe-deltakerne aktivt samtykker til deltakelse i denne utvidelsen av prosjektet, og at de dermed får god nok informasjon som tilfredsstiller kravene i personopplysningsloven.

Vi legger til grunn at prosjektet for øvrig er uendret og viser til våre tidligere vurderinger.

Ta gjerne kontakt dersom noe er uklart.

Vennlig hilsen

Vigdis Namtvedt Kvalheim

Juni Skjold Lexau

Kontaktperson: Juni Skjold Lexau tlf: 55 58 36 01

Avdelingskontorer / *District Offices:*
OSLO: NSD. Universitetet i Oslo, Postboks 1055 Blindern, 0316 Oslo. Tel: +47-22 85 52 11. nsd@uio.no
TRONDHEIM: NSD. Norges teknisk-naturvitenskapelige universitet, 7491 Trondheim. Tel: +47-73 59 19 07. kyrre.svarva@svt.ntnu.no
TROMSØ: NSD. HSL. Universitetet i Tromsø, 9037 Tromsø. Tel: +47-77 64 43 36. martin-arne.andersen@uit.no

Appendix 6: Information and declaration of consent (in Norwegian and English)

Norwegian

INFORMASJON TIL KAMMERMUSIKKGRUPPER OM FORSKNINGSPROSJEKTET
"Aural awareness in musical practice"

Prosjektets bakgrunn og formål

I prosjektet vil jeg studere broen mellom utøving og gehør, ved å stille spørsmålet: *Hvordan bruker musikkstudenter gehøret på kammermusikkøvelser?* Bruker dere ferdigheter og strategier dere har tilegnet dere i gehørfaget? Bruker dere egen intuisjon? Hvordan mener dere at kunnskaper og ferdigheter i gehør kan bidra til å forbedre kammermusikkøvelser?

Prosjektet er en del av innsatsområde B ved NMH; Forskning om og for høyere musikkutdanning.

Hva innebærer deltakelse i prosjektet?

Som deltaker blir du en av 12-20 studenter, fordelt på fire kammermusikkgrupper. Utvalget gjøres på grunnlag av de faste kammermusikkgruppene knyttet til kammermusikkfaget på NMH.

Med hver kammermusikkgruppe ønsker jeg å:

- observere to eller tre kammermusikkøvelser uten lærer
- observere en til to kammermusikktimer med deres kammermusikklærer
- gjennomføre et gruppeintervju

Kammermusikkøvelsene vil bli tatt opp på video, jeg vil ta feltnotater under kammermusikktimene, og det blir gjort lydopptak av gruppeintervjuene.

Hva ønsker jeg å undersøke?

I observasjonen søkes informasjon om hvordan dere bruker gehøret og deres musikalske bevissthet på kammermusikkøvelser, når lærer ikke er tiI stede. På kammermusikktimene ønsker jeg å observere hvilke gehørrelaterte problemstillinger dere jobber med sammen med deres lærer. I gruppeintervjuet vil jeg bruke "stimulated recall", en teknikk der vi sammen ser opptak fra øvelsene, som dere får kommentere. I intervjuene ønsker jeg generelt å lytte til deres refleksjoner rundt gehørets betydning på kammermusikkøvelser. Kammermusikklærer deltar ikke på gruppeintervjuene.

Bruken av opplysningene

Opplysningene vil bli analysert med hensyn til

- karakteristika ved den enkelte gruppe
- likheter/ulikheter mellom gruppene
- likheter/ulikheter mellom instrumentgrupper
- aktiv bruk av musikalske elementer i analyse og tolkning av musikk
- gehørets betydning på kammermusikkøvelser

Senest ved prosjektslutt, 30.03.2014, vil lydopptak og kobling til navnelister bli slettet, mens indirekte personidentifiserende opplysninger fra intervju og observasjonsnotater vil bli slettet eller grovkategorisert på en slik måte at det ikke kan tilbakeføres til enkeltpersoner. Jeg ønsker imidlertid å oppbevare videoopptak fra kammermusikkøvelsene til eventuelle nye forskningsprosjekter innen forskning på gehør og musikalsk samspill, til 31.12.2020.

Varighet

Prosjektets varighet er hele min stipendiatperiode, august 2010-mars 2014. Observasjonene og intervjuene gjennomføres høsten 2011, og eventuelt våren 2012.

Frivillighet, taushetsplikt, konfidensialitet

Det er helt frivillig å delta i prosjektet, og du/dere kan når som helst trekke dere uten begrunnelse. Det vil ikke få konsekvenser for ditt forhold til høgskolen eller lærerne hvis du ikke ønsker å delta, eller hvis du senere velger å trekke deg. Det er kun jeg og min(e) veileder(e) som vil få tilgang til de

personidentifiserbare opplysningene. Vi er underlagt taushetsplikt og opplysningene vil bli behandlet konfidensielt.

Materialet vil bli fremstilt i en doktorgradsavhandling, samt presentert på konferanser. Det vil ikke være mulig å tilbakeføre opplysninger i publikasjonen eller presentasjonene til enkeltpersoner.

Prosjektet er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjenesteAS.

Dersom du har spørsmål i forbindelse med prosjektet, ta gjerne kontakt!

Vennlig hilsen
Aslaug Louise Slette
stipendiat ved NMH

Fagseksjon for musikkpedagogikk og musikkterapi
Tlf: [tlf.nummer]
Rom: [romnummer]
E-post: [e-postadresse]

FORSKNINGSPROSJEKTET

Aural awareness in musical practice

Samtykkeerklæring

Jeg har mottatt informasjon om prosjektet "Aural awareness in musical practice" og ønsker å delta.

Dato: ..... Signatur: .....

English

INFORMATION TO CHAMBER MUSIC GROUPS ABOUT THE RESEARCH PROJECT
"Aural awareness in musical practice"

Background and purpose

In this project I am going to study the bridge between musical practice and the musical ear, by asking the question: *How do students in higher music education use their musical ear in chamber music rehearsals?* Do you use skills and strategies you have acquired in aural training class? Do you use your intuition? How do you think that aural knowledge and aural skills can enhance chamber music rehearsals?

The project is part of "Innsatsområde B" at NMH; research in and for higher music education.

What does your participation imply?

As a participant you are one of 12-20 students in one of four chamber music groups. The selection is done on the basis of the chamber music groups connected to the chamber music subject at NMH.

With each chamber music group I would like to:

- observe two or three chamber music rehearsals without a teacher
- observe one or two chamber music lessons with your chamber music teacher
- do a group interview

The chamber music rehearsals will be video recorded, I will do field notes during the chamber music lessons, and do sound recordings of the group interviews.

What am I going to investigate?

In the observations I am looking for information about how you use your musical ear and your musical awareness in chamber music rehearsals, when the teacher is not present. In the chamber music lessons I would like to observe what aural problems you work on together with your teacher. In the group

interview I am going to use ”stimulated recall”, which means that we watch video clips from the rehearsals, and you get to comment on them. In the interviews I generally would like to listen to your reflections on the signification of using your musical ear in chamber music rehearsals. The chamber music teacher will not be present in the group interviews.

Using the information

The information will be analyzed regarding

- characteristics of the groups
- similarities and non-similarities between the groups
- similarities and non-similarities between instrument groups
- active use of the elements of music in analysis and interpretation of music
- the signification of using the musical ear in chamber music rehearsals

At the latest, in the end of my project, March 30 2014, sound recordings and the connections to your names will be deleted, while indirect identifying information from interviews and observation notes will be deleted or categorized so that it cannot be traced back to individuals. Yet, I wish to keep video recordings from the chamber music rehearsals for possible new research projects within the field of the musical ear and musical practice, until December 31 2020.

Lastingness

The project lasts for as long as I am a Ph.D. student, from August 2010 until March 2014. The observations and interviews will be carried out in the autumn 2010, possibly continued in the spring 2012.

Voluntariness, professional secrecy, confidentiality

You are voluntarily participating in this project, and you may withdraw your participation at any time, without specific reasons. It will not affect your relations to the Academy, nor your teachers if you do not wish to participate, or withdraw your participation later on. Only I and my supervisor(s) will have access to the information that are individually identifying. We are subjects to professional secrecy and the information will be treated confidentially.

The information will be presented in a doctoral thesis, and in conferences. It will not be possible to identify individuals in the thesis or in the conference presentations.

The project is reported to ”Personvernombudet for forskning, Norsk samfunns-vitenskapelig datatjenesteAS”.

If you have any questions, please let me know!

Best regards,
Aslaug Louise Slette
Ph. D. fellow at NAM

Department for Music Pedagogy and Music Therapy
Tel: [telephone number]
Room: [room number]
E-mail: [e-mail address]

THE RESEARCH PROJECT

Aural awareness in musical practice

Declaration of consent

I have received information about the research project ”Aural awareness in musical practice” and I would like to participate.

Date: ..... Signature: .....

Appendix 7: Promise of confidentiality (in Norwegian and English)

Norwegian

FORSKNINGSPROSJEKTET
Aural awareness in musical practice

Taushetserklæring

Det er kun jeg og min(e) veileder(e) som vil få tilgang til de personidentifiserbare opplysningene. Vi er underlagt taushetsplikt og opplysningene vil bli behandlet konfidensielt.

Materialet vil bli fremstilt i en doktorgradsavhandling, samt presentert på konferanser. Det vil ikke være mulig å tilbakeføre opplysninger i publikasjonen eller presentasjonene til enkeltpersoner.

Prosjektet er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjenesteAS.

Dersom du har spørsmål, ta gjerne kontakt!

Vennlig hilsen
Aslaug Louise Slette
stipendiat ved NMH

Fagseksjon for musikkpedagogikk og musikkterapi
Tlf: [tlf.nummer]
Rom: [romnummer]
E-post: [e-postadresse]

Dato: ..... Signatur: .....

English

THE RESEARCH PROJECT
Aural awareness in musical practice

Promise of confidentiality

Only I and my supervisor(s) will have access to the information that are individually identifying. We are subjects to professional confidentiality and the information will be treated confidentially.

The information will be presented in a doctoral thesis, and in conferences. It will not be possible to identify individuals in the thesis or in the conference presentations.

The project is reported to "Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjenesteAS".

If you have any questions, please let me know!

Best regards,
Aslaug Louise Slette
Ph D fellow at NAM

Department for Music Pedagogy and Music Therapy
Tel: [telephone number]
Room: [room number]
E-mail: [e-mail address]

Date: ..... Signature: .....

References

Alanen, R. (2003). A sociocultural approach to young language learners' beliefs about language learning. In P. Kalaja & A. M. F. Barcelos (Eds.), *Beliefs about SLA: new research approaches*. New York: Springer.

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