Surrounded by Sound. Experienced Orchestral Harpists' Professional Knowledge and Learning

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Prelude

> I believe that training to become an orchestral musician is the best preparation a future writer can have. It teaches you patience and precision. No clinkers permitted when you play in a concert, no misplaced words or surprise expressions. You watch your every comma as carefully as you used to watch every little staccato dot to give each note its full rhythmical weight and accent. (What the printers do to it afterwards, that's another story!) And it teaches you form, dynamics, phrasing – form in freedom. It imbues you with that intangible instinct that demands a percussion, a repetition here, a brief lyrical interlude there, a sense for light and shadow, for the necessity of a crescendo, an allegro, a rest, a dramatic racing and shortening as in a strett. Even today I think in musical terms; I might report to my conductor husband: 'this evening I goofed. I wrote this chapter as a rondo when it really calls for a variation form.' (Baum, 1962/1964, p. 325)

This study has not been done in a musical vacuum. While writing this thesis I have regularly worked with professional orchestras as a harpist. Some of the issues that emerged in the study have been tested in practice. I have also been reflecting on what was happening in the orchestra while playing such as when I had to choose which version of *The Nutcracker* cadenza to play at a concert. When I had to rewrite parts that were written for two harps to be performed on one harp. When I was contracted to play second harp and had to double the part in a Prokofiev piece so all the notes could be played since it was unplayable on one harp, although it was written for one harp. When I found myself reflecting on and assessing my own listening skills and contextual skills while playing the same chord the first time with the brass section and the second time with the woodwind section adjusting for the sections' different attacks. When I was playing the second harp I found myself reflecting on the change of role while playing together with the first harp as opposed to solo passages.

However, writing a thesis about orchestral playing probably does not make me a better orchestral harpist. Understanding a practice is not the same as performing a practice. For example, it is difficult to keep up technical skills when writing a thesis due to lack of time to practice, and technical skills are a basis for a performed practice. But I have found it important to maintain my practical knowledge of music. And sometimes when given a compliment by a colleague I could relate it to my research, and I was especially pleased when complimented for good ensemble playing, and good quality of the tone. Due to this, I enjoyed orchestral playing more than I ever had before. I also felt that I had access to knowledge of generations of musicians.

First of all, I want to thank the musicians who so generously shared their knowledge, and gave me access to their professional lives and work in their orchestras. Without the insights and experiences of Anna Levina, Natalia Shameyeva, Nicolas Tulliez and Karen Vaughan this thesis would not have been possible.

I want to thank my supervisor Eva Sæther who always met me with never-ending trust and support. As a supervisor she had the role of a mentor not only in the process of writing a thesis but also as a gate-keeper to, and role model in, the academy. No one has been more important in my education, and I am fortunate to have had a supervisor who always was friendly, thoughtful, and knowledgeable. I also want to thank my co-supervisor professor Liora Bresler who challenged me to think in new ways.

I want to thank the students I supervised and examined at Malmö Academy of Music, who taught me more about various obstacles and processes in research than I would have learnt by myself during these years. I want to thank all those who have read and commented the text in various stages such as professor Göran Folkestad, professor Petter Dyndahl, professor Sture Brändström, professor Bengt Ohlsson, professor David Hebert, and doctoral students and colleagues at Malmö Academy of Music and other academic institutions all over the world. I would like to thank my proofreader Karlin Love, who did not only read the text as a scholar but also as a musician and a composer. I would like to thank *Sparbanken Finn Framtidsstiftelse* from which I received the grant that made it possible to conduct the interviews in the study.

And lastly I would like to thank my family, Tor and Klas, with whom I have done other things of equal importance to writing a thesis.

The quote in the title of the thesis is from the interview with Karen Vaughan. I asked 'What do you enjoy most about playing in an orchestra?' She gave the answer 'Well, I enjoy playing in the orchestra, being part of the whole thing. I always loved that, I love being *Surrounded by Sound*'.

Chapter 1.
Introduction

In all kinds of musical performances there are restrictions on how, when and where musicians may perform. Orchestral playing may have the most extreme restrictions in Western classical music and in some contexts orchestral playing even symbolizes restrictions for musicians. The metaphors of the orchestra range from seeing the orchestra as an army in which individuals work toward the same goals under a competent leader, seeing the orchestra as a mirror of social organization, to seeing the orchestra as a machine (Spitzer, 1996). Thus the focus has shifted from seeing the orchestra as humans working together as in the 18th century to regarding the orchestra as a 'thing' in the 19th century. In the 20th century the orchestra became used as a metaphor for discipline, organisation and control (Spitzer, 1996). Due to the organization and structure of the orchestra it is interesting to examine the freedom and the possibilities of the orchestral musician, and not only the limitations and difficulties. This can illuminate the working situation of musicians as well as conditions for performing music in a more general perspective.

By choosing orchestral playing as a topic for research, I would also like to highlight the individual's role and the space for interpretation. One of those who made me pay attention to this subject was my teacher in orchestral playing at the Hogeschool voor de Kunsten in Utrecht, Emily Boedijn, who was a harpist in the Royal Concertgebouw Orchestra in Amsterdam. During her period as my teacher, she was ill with cancer and her memory was affected. In one memorable lesson, I played the harp part to a symphony by Mahler. When looking at the part my teacher said that she had never before heard of this piece, or the composer. I played the first note and she interrupted me to tell me that this tone is with the double bass and I had to play it late due to the tone production of the double bass and low on the string to get the sound to blend together with the frequency range of the double bass. What fascinated me was that the music and the function of a single tone were so strong that it opened up a whole musical universe, but also the devoted orchestra musician's attention to detail.

Another musician who influenced me was Kristina Mårtensson, at the time double bass player in Malmö Symphony Orchestra: 'When you are sitting in the orchestra it is the best music, the best orchestra, the best conductor, the best interpretation you've ever done. Afterwards, you can think differently'. She said that when we were performing with an amateur church choir. The orchestra consisted of professional musicians that

normally did not perform together. We talked about how to maintain interest in the music on occasions that were not optimal, and that some musicians were able to keep this interest and some not.

These anecdotes show two issues: music's relationship to the individual musician, and the musician's presence in the present. They both show quality aspects of orchestra players: the desire to develop musically and the desire to do good work. My own apprenticeship as an orchestral musician was typical of a harpist. When I began my studies at the Malmö Academy of Music, I had played in an orchestra less than ten times counting both rehearsals and concerts. I had been paid for three of the four concerts I had played with orchestras. One of the reasons I had so few opportunities was that I did not own a harp until I started the second year at the academy. During my study at the academy I participated in few orchestral projects. I have done my apprenticeship in professional orchestras as a professional musician.

For me, the process of writing a thesis led my thoughts to return to situations, ideas and experiences that I have had in the past but which are not directly related to music. I realized that I had reflected on these issues for many years but never formulated them. Two short scenes from books I read more than 10 years ago and stayed in my thoughts can represent this prolonged process. One is Stephen Fry's (2000/2001) *The stars' tennis balls* in which he describes two men discussing when a number of pine cones cannot be seen as individual objects anymore, but can be seen as a pile. The second scene is from David Leavitt's (1986) *The lost language of cranes* in which a very lonely child creates a language through imitation of construction cranes that he sees from his window. The example from Fry's book can represent my efforts to find a theoretical basis, to seek patterns and explanations. The example from Leavitt, where the short section from his book is a story within a story of becoming what you love, may represent the content of my work. The child in the story creates meaning and language in a context, and it is a non-verbal language. When the child is taken away from this environment it can no longer communicate, and life becomes incomprehensible. In this story my interest in communication and non-verbal expression, pre-eminent in music, can be found. These literary anecdotes suggest two important aspects: the first is to make the musical space and its freedom and constraints visible, the second is to find structures that affect the individual in learning and in practice. I also demonstrate that my choice of theoretical perspective is not done from a theoretical *tabula rasa*, but is dependent on to personal interests, even if these have not previously been formulated using scientific theories. This study is built on the assumption, related to the theoretical perspective, that practical knowledge can be expressed in autobiographies, scores, novels, performances, and recordings as well as interviews conducted by researchers and presented in scientific research publications. This perspective draws attention to the thin line between practical knowledge and research. A practical example may be this question: Can 40 years of searching for a good fingering for a bar in a piece by Strauss be regarded as research? It is based on experience, it is based on source reading, it is based on contextual awareness, it is based on the knowledge of extreme detail, it is based on education: Can

it be research? But when, or if, it is published, it is for professional use and not for the research community. This example does not, however, take into consideration different approaches to aesthetic issues that are possible within research on practical knowledge. By acknowledging practical knowledge as that which is not primarily published in scientific publications it is possible to regard my informants as co-researchers in the process. Schippers (2007) claims: 'Although many musical practices involve research, this does not necessarily qualify all music making as research' (p. 35). The research in this study can be considered as something in between what Schippers (2007) calls research into practice – the outsider perspective, and practice as research – the insider perspective.

This thesis is written from a music educational perspective, in which professional orchestral playing is seen from a perspective of learning and knowledge. Learning and knowledge is in this perspective not only related to formal education but also to the life-world of the professional musician. Music education as an area of research at the Malmö Academy of Music is based on the presupposition that musical learning applies to more contexts than only formal institutional teaching (see Folkestad, 2006). This has the consequence that professional practices can be researched as learning environments. And, as shown in this study, institutional teaching and learning and professional practice are intertwined.

1.1 Aim and research questions

The aim of this thesis is to identify and describe the knowledge, the skills and the special qualities of experienced orchestral players. Of equal importance are the issues that frame (see 1.3.2) the possible personal musical expression for orchestral musicians. In this study it is illustrated by the special conditions for harpists.

The main research question is: What issues of knowledge in orchestral playing are expressed in interviews with experienced orchestral harpists?

Sub questions to the main research question are: What are the frames of orchestral musicians? How can these frames be treated? What are the skills of experienced players and how can these skills be learnt? What can be considered to be specific qualities of high level orchestral playing?

1.2 Previous research

Since the object of this research can be viewed through multiple perspectives, a clear distinction belonging to a certain discipline has not been chosen. In the tradition of Aristotle's method (Nussbaum, 1993) it is important to view the object of research from as many angles as possible. Research about orchestral playing has been published in journals as different as *Journal of Vocational Education and Training*, *GeoJournal*, and *Journal of Occupational Health Psychology*. All different aspects contribute to the body of knowledge of orchestral playing. But, as Aristotle (Nussbaum, 1990) emphasized, a choice also means that some aspects are not included. The perspective chosen in this study is to focus on the orchestral musicians' point of view. Therefore organizational aspects, economic aspects or aspects from the conductor's point of view have not been addressed. The emphasis is on the orchestral musicians' practice, learning in the orchestra and the connection between research and practice. Some texts referred to in this section are also referred to and the issues are further developed in the background chapter, Chapter 2, and the theory chapter, Chapter 3. This is indicated in this section by references in parenthesis the first time the author is mentioned.

1.2.1 Orchestral practice

Much of the research on orchestral practice is based on working conditions and work related problems as physical problems. Liljeholm Johansson's (2010; see 2.3.2; 2.3.3; 3.2.6; 3.4) thesis focuses on psycho-social working environments in orchestras. Parasuraman and Purohit's (2000; see 2.3.3) article on distress and boredom in orchestras focuses on stress factors. Mogelof and Rohrer's (2005) study suggests that musicians in an elite symphony orchestra are not, in general, more satisfied with their working conditions than musicians in a non-elite orchestra. Other aspects, such as how loud volume affects orchestral musicians due to position, venue and repertoire are treated in O'Brien, Wilson and Bradley (2008). They also refer to other studies on orchestral noise or high-level orchestral sound, dealing with the sound level, and the risk of hearing loss and health problems. All these issues are of course important when researching different aspects of orchestral practice. Liljeholm Johansson (2010) describes physical issues regarding differences between musicians playing different instruments. Semmler (1998) made a study of a relatively small group of harpists. 29 harpists from 10 to 75 years old, including students, teachers and professionals participated in the inquiry. Her study showed that all but three reported pain, and that not only playing but also moving the instrument was a source of physical problems. In the article she refers to a study of 2000 orchestral musicians conducted by Middlestadt and Fishbein. Their study showed that among professional orchestral musicians, harpists perceived that they had more on-the-job stress than other symphony orchestra musicians. Knight's (2006; see 2.3.2; 2.3.3) article on spatial issues on different levels

in the orchestra puts a slightly different angle on orchestral practice since practical issues of orchestral playing are highlighted.

Frimodt-Møller (2010; see 3.3) deals with negotiations and coordination while playing music, an issue that he also contextualizes in orchestral playing. His experiences of orchestral playing are from playing the violin at an amateur level and he builds some of the results in his thesis on these experiences. Large orchestras have a hierarchical structural model and he describes how information must travel in a string section due to the seating arrangements. Therefore the placement is important for the hierarchy. He points out that the conductor is responsible not only for time-keeping but also interpretation, and that he or she is placed where everybody in the orchestra can see him or her, but that the conductor is dependent on the musicians to follow the instructions. Another issue is that louder instruments have more impact than softer instruments. An example of this is if a brass section picks a different tempo, the rest of the orchestra will follow. He also claims that the majority decides and the minority will have to follow, regardless of position. The main aim is to emphasize how the coordination works, and that the hierarchical systems do not work as intended in these situations. In the introduction of the thesis he illustrates these issues with experiences of orchestral playing. The first example is of a percussion player making a mistake and chaos emerging in the orchestra. The second example is of a cellist who picks the wrong tempo in a solo and two violin players, one of them being the concert master, decide to follow the cellist instead of the conductor and pull the rest of the orchestra with them, and the conductor then picks the tempo of the orchestra. Even if those examples are from amateur orchestras and not necessarily comparable to professional orchestras, it is possible to transfer these notions of decision-making to professional orchestras.

Brodsky (2011) claims that there is a lack of research on ageing symphony orchestra musicians. Often musicianship is described as life-span development but nevertheless, says Brodsky (2011), research is often focused on early childhood, adolescents and young adults. He also found that research on seasoned musicians often emphasizes health problems, loss of skill, and physical issues due to ageing and the orchestral work environment. Brodsky suggests there is a need for research on musicians who remain able to perform music, and not only on those that no longer have the ability. The questions that emerge from Brodsky's rationale are comparisons between ageing musicians and ageing non-musicians. However, he also poses questions about seasoned musicians' knowledge, working environment and musical development. Brodsky's (2006) results from an interview study show that the choice of being an orchestral musician may not be what the musicians aimed for but that it offers a permanent employment as a musician, something that is not very common. Musicians are often trained as soloists. The orchestral working environment with health problems and stress was considered very demanding, but the advantage was to work with other musicians. The social and musical environment is thus important. Difficulties were the relatively low pay and odd working hours that made it hard to combine with family life.

However, the importance of music in their lives was essential to his interviewees in their choice of becoming and being orchestral musicians.

Allmendinger, Hackman and Lehman (1996) conducted a study in which they compared seventy-eight professional orchestras from four different countries. They posed five major research questions concerning differences between orchestras, career patterns, female participation, excellence and what happened with the orchestras in the former East Germany. Their study shows differences between countries and also between different kinds of orchestras in the same country. One of the orchestras from this study may have been included in Allmendinger, Hackman and Lehman's study. When describing the orchestras in Great Britain, the London cooperatives were separated from BBC orchestras and regional contract orchestras. There were two major areas where the London cooperative orchestras stood out compared to all other orchestras and those were 'player recognition ("Excellent Playing Pays Off in This Orchestra")' (p. 199) which was high, and 'music director authority ("In This Orchestra, the Music Director is the Only Real Boss")' (p. 199) which was low. Thus the London cooperative orchestras can be seen as musician-centred. In general Allmendinger, Hackman and Lehman (1996) show that orchestral musicians are not satisfied with their pay, but that they have high internal work motivation. In general orchestral musicians do not change workplace frequently. Change of orchestra is mainly undertaken to get work in a better orchestra. In regional orchestras 86% of new musicians come directly from formal education or the freelance market. They describe a typical career as beginning when a recent graduate or quite young freelance musician gets work in a regional orchestra. After a few years the musician may audition for a major orchestra, possibly several positions are applied for quite early in the career. But after that they usually stay in the same position until retirement. In the study they claim that what predicts an orchestra's overall standing is the financial strength. However, there are orchestras that overperform or underperform when the level of player talent and the level of ensemble playing are compared. Financial strength may attract better musicians but it can be more complex, for example, when considering the influence of the music director and the board.

Cottrell (2004; see 3.2.1; 3.2.6; 3.3; 3.4) gives a broad picture of music-making in London, of which orchestral playing is one topic. He points to two problematic areas for orchestral musicians. One is the feeling of lack of contribution to the orchestral context, which is partially dependent on position in the orchestra. The other area is adapting to the interpretation of the conductor. Musicians' views on conductors are complicated. They hold few conductors in high esteem, are indifferent to most, and dislike many. Musicians also have experiences of being harassed by conductors. As Cottrell points out there are many anecdotes and jokes about conductors shared amongst professional orchestral musicians, probably because of the hierarchical structure of the orchestra and the stressful work. He also suggests that humour is used to 'convey judgments on the musical ability of others [colleagues], usually when they

are not present' (Cottrell, 2004, p. 141). He also stresses that social skills are important to musicians.

Dobson and Gaunt (2013; see 2.3.2; 3.4) present in a forthcoming article one part of a larger research project on orchestral musicians. The research question they pose is: 'What skills and qualities do orchestral musicians consider to be essential for their work?' The research question is similar to some of the research sub-questions in this thesis and the results from their interviews are similar. They also address social skills as important for orchestral musicians as well as having a 'radar', which means that orchestral musicians should be able to listen to other musicians, communicate with other musicians and be able to adapt when needed.

1.2.2 Learning orchestral playing

Smilde (2009a; 2009b; see 3.2.6; 3.3) focuses mainly on professional training in conservatoires in her thesis on musicians' lifelong learning. The material on orchestral playing is scant in the study since it has a broader approach to music and learning. The orchestral musicians are described under the category of portfolio careers, musicians who work in different areas or roles within music, compared to the categories music pedagogues and educators, and soloists. Smilde (2009b) claims that portfolio careers are common today and that it is related to changes in the contemporary music profession. Smilde (2009b) also refers to a study where students mentioned lack of experience of playing in larger ensembles as one of the issues. Another study reports employers claiming that students lack experience and knowledge of orchestral playing from their education. One of the consequences of Smilde's study is a recommendation of closer contact between educational institutions and professional institutions. In Smilde (2009a) three out of 32 biographies concern orchestral musicians. These biographies indicate that musical activities outside the orchestra are important for the individual musician's learning. For the individual musician in the orchestra learning is individual and may depend on the level of knowledge, the job position, and the musical level of the orchestra. It turns out that all musicians do not feel that they are learning in the orchestra. The one who states this most clearly is a musician who has a tutti service in a moderately good orchestra. However, a section leader in a highly ranked orchestra claims that his learning in the orchestra is large and refers to learning by listening, the personal response to listening and shared musical empathy. The third of the musicians, a co-principal, consider the orchestra as a place where it is possible to artistically learn the most.

Hager and Johnson (2009; see 3.2.6) conclude that learning in an orchestra consists of making context-sensitive judgements, since a musician learns orchestral playing by playing in the orchestra. Participation is thus essential. In their article they compare the differences between what is learned in practice and what is learned in music schools. The comparisons are between peer-to-peer mentoring versus master-to-pupil teaching,

practice-based learning versus theoretical learning, tacit learning versus explicit learning, fitting into group style versus individual style, context-rich learning versus context-limited learning and becoming a professional orchestral musician versus being a competent orchestral player. Johnsson and Hager's (2008) study of a mentor program conducted between a symphony orchestra and recent tertiary graduates showed that social skills were important in the orchestral context. These social skills consisted not only of how to behave but also how to address the work in itself and how to take responsibility. Another skill was transferring between the role of a soloist and the role of an ensemble player. Becoming a professional orchestral musician was not to adapt to a single role but also to address other musical and social roles such as teaching and playing chamber music. They claim that *citizenship in practice*, in their study, shows that becoming a professional musician is related to a practice and also a link from the past to the future. They conclude that formal music education cannot provide the knowledge required as a professional institution can with a mentoring program. J. Davidson and Jordan (2007; see 3.2.1) observe that studying music at higher educational levels such as academies and conservatoires is different from earlier stages of education and from university music education, since all music related activities, such as orchestral playing, will be provided within education and are not seen as extracurricular.

Lonnert (2011; see 2.3.4; 3.2.6) describes how harp teachers at lessons prepare students for possible contextual learning in the orchestra. The teacher's role becomes to prepare the student practically, musically, technically and emotionally for orchestral playing which can be done in lessons even if the actual learning of orchestral playing take place in the orchestra. Luff and Lebler (2013; see 3.2.6) describe how one-to-one teaching has to be complemented by collaborative learning when learning an instrument that is mainly considered as an orchestral instrument such as the French horn.

1.2.3 Research on practice by musicians and, specifically, harpists

Brodsky (2006) notes that few studies have been conducted on orchestral practice and orchestral musicians. He thinks that the reason is the difficulty of gaining access to the required knowledge due to group barriers and the difficulty of gaining orchestral musicians' confidence. Some researchers draw from their own experience as professional musicians, or experiences of playing music in an amateur orchestra, as bases for their research (Cottrell, 2004; Frimodt-Møller, 2010; Knight, 2006; Liljeholm Johansson, 2010). This might not only be a sign of positioning or a way of validating the research, but also that research questions or issues emerge from practice. However, it can also be an illustration of Brodsky's (2006) observation regarding the difficulty of getting access to the required information, that only those with experience of orchestral playing have enough knowledge to understand and get access to orchestral culture. Ratkić (2006) observes that there is a difference between having knowledge of a topic as an amateur and having knowledge as a professional. In his description, the analysis

made by an amateur musician could be unusable for a professional musician. However, as K. Nielsen (2006) explains, being an amateur musician gives some insight into the basic concepts and terminology, both the formal terminology and the informal terminology of communication between musicians.

It is also possible that the investigation in itself can be difficult to transfer to a different context. This issue can be highlighted by the research by Marotto, Roos, and Victor (2007) who in their article 'Collective Virtuosity in Organizations: A Study of Peak Performance in an Orchestra' base their research on a conservatory orchestra and the conducting students and teacher who conduct the orchestra. It might be possible to use their research as an analogy to other organisations but it is difficult to use it as a basis for studying the work of professional orchestras in the sense of collective virtuosity as it would be assessed in this study. One of many examples of the differences is shown in this quote: 'It was too early to address interpretative issues of rubato [slowing down] and stringendo [speeding up]. First everyone needs to know the notes, and know what everyone else is playing…' (p. 402). This is not a starting point for a professional orchestra when playing Tchaikovsky's *5th Symphony*, and the concept of collective virtuosity then has a different meaning, which might be problematic.

One example of research in the tradition of musicians who examine topics close to their own practice is Shameyeva's (1994; see 2.2.1; 3.3) thesis on Russian harp music that can be seen as emerging from both experience of practice and knowledge of a specific field. Research on musicians is often in the form of biographies and these biographies can contain information about professional practice. However, emphasis on biographical material is different from emphasis on professional practice. An example of a biography is Pike's (2003; see 2.3.2; 3.2.6) masters thesis on the orchestral harpist Alice Chalifoux. The emphasis is on Chalifoux's biography and teaching, but also Chalifoux's orchestral work is mentioned. Another example is Slaughter's (1992) masters thesis that deals with the harpist, teacher and composer Henriette Renié. However, Renié did not work as an orchestral harpist and she only had an indirect impact on orchestral music by contemporary composers whom she influenced and by her writings on orchestral practice. In her introduction, Pike (2003) tells anecdotes from harp lessons with Alice Chalifoux, as she is a harpist writing about a harpist. Slaughter (1992) does not specifically mention that she herself is a harpist in her master of music thesis.

Research about harpists, and harp centred issues, has been carried out by harpists such as Clark (2007; see 2.1.2), Galassi (1991; see 2.1.2), Lawrence-King (1991; see 2.1.2), Rensch (2007; see 2.1.2; 2.1.3; 2.2.3) and Zingel (1992; see 2.1.2; 2.2.1; 2.2.3), even if some of these authors are primarily performers and not researchers. Other instrumentalists have conducted research on music education topics close to their own practice or emerging from their own practice, such as Gaunt (2004; 2007) on oboe practice, Johansson (2008) on organ practice, Ljungar-Chapelon (2008) on flute practice, and Luff and Lebler (2013) on brass pedagogy. But there are exceptions; Fabris (1991; see 2.1.2), for example, is not a harpist but a musicologist who also studied lute

but writes about harp from a historical perspective. Experiences of musical and music educational practice that formed a basis for research can also be expanded to a wider music educational context as in research by Åberg (2008; 2011; see 3.1.3; 3.1.4; 3.2.5; 3.3), Bresler (2005; see 3.1.6), Gaunt (2011; see 3.2.1), Osa (2007; see 3.1.6), and Sæther (2013; see 3.1.6).

1.2.4 Summary

Three areas of research have been addressed in this section: research on orchestral practice, research on how to learn to play in an orchestra and research emerging from practice conducted by musician-researchers. Work environment problems and issues are often emphasized in research on orchestral practice. The research on learning orchestral playing is mainly about how young musicians learn. Brodsky's (2011) rationale where he calls for research on orchestral musicians who perform music professionally rather than those who are in the beginning of learning orchestral playing or who no longer can play in an orchestra highlights these issues. The three different approaches described above about the research of musician-researchers are: research on a practice of musicians, research on a specific issue, and research on specific musicians. The research by musician-researchers is also often based on practice, or issues that emerge from practice. However, in research from a practice perspective there is a lack of studies that deal specifically with orchestral practice, or with the concept of professional knowledge in orchestral playing.

1.3 Terms and concepts

In this section the terms and concepts are explained. The first section deals with concepts used regarding the work of musicians'. The second explains the concept of frames as used in this thesis. The third section deals with translations of terms and concepts since some writers referred to in the theoretical framework and method chapter have been published in Nordic languages. In the last section choices concerning concepts and terms are presented.

1.3.1 Occupation – profession – vocation – craft

When writing about musicians' knowledge the question of how to define musicians' work emerges. Can being a musician be regarded as an occupation, a profession, a vocation, a craft, or should another heading be used? These different concepts emphasize different aspects of knowledge as propositional knowledge and practical knowledge. For example, a profession is more dependent on propositional knowledge

than a craft. The emphasis is also on different levels of independence, where, for example, a profession is more autonomous than a vocation. However, a craft may be more autonomous than a vocation. There are also other ways of separating these concepts from each other, for example, how closely they are related to academic education or institutions, or how they are connected to status and power. The definition of professions, and professionalism, can, from a sociological perspective, be seen as normative value systems and ideological control systems (Evetts, 2003). There is no common definition of what a profession is (Fauske, 2010; Molander & Terum, 2010) but being a musician may be defined as a profession by some researchers. In this thesis a choice has been made to connect with research on professions and thus the choice of using the term profession was made. As Evetts argues (Fauske, 2010) it is not necessary to define the concept but still possible to use it in research when dealing with professionalism in different occupations. In research about professions there is not one perspective or research method that prevails, but a wide spectrum of aspects can be studied. This study deals with what A. Molander and Terum (2010) describe as macro focus and micro focus. The micro focus is the actual object of research, which is the content of the interviews, the professional knowledge. The macro focus is the collective structural levels of the profession. The concept, profession, describes a collective, where the individual human being is a part.

1.3.2 Frames as a key to finding musical freedom

In this study a way of finding the musical freedom to perform has been to try to define what the limitations, or the *frames*, in the profession are (see 1.1; 6.2). When conducting the study, definition of frames was open, since it could be a possibility that other definitions than any pre-constructed definitions might emerge in the interviews. It was also possible that the informants did not consider they had any freedom in their professions, a view that could be associated with the metaphors of the orchestra described by Spitzer (1996) above in the introduction.

The frames could be divided into two kinds. There are pre-set frames that affect the musician such as the size of the orchestra, the venue, and the orchestral part, which can be seen as 'hard frames'. To use the concept hard frames instead of 'frameworks' was a choice not to concentrate only on organisational or structural aspects. Other frames are particular to performing individuals such as the interpretation of the conductor or the interpretation of the musicians, which can be seen as 'soft frames'.

A result of the study was that the frames sometimes were negotiable, not only the soft frames but also the hard frames. For example, it was possible to double a harp part to be able to play the part well, thus the size of the orchestra could be negotiated. And it also proved to be related to knowledge: to know which parts should be divided and how they should be divided to gain the best result demands extensive knowledge of the performers.

The choice of 'frames' instead of the more commonly used 'constraints' was due to the latter's negative associations. The term 'frames' can be considered to be more neutral. The frames in a practice are necessary and do not always have to be evaluated. 'Frame' is also set in contrast with freedom, a term that also could be substituted by other terms such as affordance, or potentiality.

1.3.3 Translations of terms and concepts

Due to the different translations of Greek terms and concepts in different editions of Aristotle's works some of these Greek terms and concepts have been kept within this text even if the terms are translated in the texts referred to. These are the Aristotelian terms *phronesis*, *techné*, *sofia*, *episteme*, *nous*, *praxis* and *poiesis*. This use follows the Swedish practice in books by Gustavsson (2000) and Liedman (1997; 2001/2008; 2006). Since the study is based on Nordic research traditions, as described in 4.9, a choice was made to keep the Nordic literature and thus translate concepts used, but when possible to use English versions of literature. The concepts from Johannessen's (1999; 1999/2002) model have been translated to English but, as in all translations, it is not possible to obtain the exact nuances. Johannessen (2006) acknowledges the problem of translating these concepts to English. 'Påståendekunskap' has been translated to *propositional knowledge*, 'färdighetskunskap' has been translated to *skill*, and 'förtrogenhetskunskap' has been translated to *knowledge by familiarity* (Johannessen, 2006). As seen in these translations these three concepts all contain the word 'kunskap', knowledge, in the Swedish version. Johannessen's concepts in Norwegian are 'påstandskunnskap', 'ferdighetskunnskap' and 'fortrolighetskunnskap' (Grimen, 2010). Due to the research being carried out in Sweden, texts by philosophers such as Johannessen (1999) and Janik (1996) have initially been published in Swedish and not in the authors' own languages. The difficulty of translating terms can be highlighted by the translation of the name of the research section at Kungliga Tekniska Högskolan in Stockholm (see 4.9). The Swedish name of the section is 'Yrkeskunnande och Teknologi' which has been translated to Skill and Technology. The term 'yrkeskunnande' is difficult to translate since it connects to occupation/profession/vocation/craft and knowledge, but does not fit completely into any of these categories. The concept of 'skill' that was chosen instead, comes from a different category. In an English version of a text Johannessen (1999/2002; 2006) uses *professional knowledge* for the concept 'yrkeskunnande'. Professional knowledge in this thesis and in the title is used as in Johannessen's translation.

Terms from the book *Mästarlära* (Apprenticeship) in chapters by Kvale and K. Nielsen (2000) and K. Nielsen and Kvale (2000) are also translated from Swedish to English and these terms are written in italics in the text. The translation of the concept 'mästarlära/mesterlære' to the word apprenticeship is somewhat problematic. As K. Nielsen (2006) explains the Anglo-Saxon concept is associated with learning as a part of the community of practice whereas the Nordic concept focuses on the master-

apprentice relationship and how the apprentice learns from the master. Gaunt (2011) uses the concept one-to-one tuition in a similar way to the use of the Nordic concept 'mästarlära/mesterlære'. In Chapter 4 methodological literature from Nordic countries is presented. This is due to the actual impact these books have had on the thesis. The concepts that have been translated are written with italics.

1.3.4 Choices of terms and concepts

Choices of terms and concepts used in the thesis are based on a Nordic perspective of research. In Chapter 3 several different research traditions and epistemological concepts are presented and a need to clarify terms and concepts emerges. As described in 1.3.1, the decision to use the term 'profession' was due to connections with research on professions, although a different term could have been used. A choice of naming the kind of knowledge musicians possess as practical knowledge was also made. This was due to the emphasis on knowledge as action, as a performed knowledge. The choice is related to the epistemological perspective of Janik (1996), who describes practical knowledge as knowledge that is obtained through action and experience. There are concepts, as described in Chapter 3, which sometimes are used as synonyms, for example, tacit knowledge, tacit knowing and know how. The Nordic research on practical knowledge, with which this thesis can be associated, is presented in section 4.9.

The main concepts used in the thesis can also be problematized. The concept of knowledge is used as an overall concept where all different aspects of knowledge can be included. The different aspects, as in Johannessen's (1999; 1999/2002) model, can be used, however, in this thesis there is not an aim to confirm Johannessen's model but to use it as a tool. The original concept in Johannessen's model 'färdighetskunskap/ferdighetskunnskap' is different from the Nordic word for skill. Therefore the translation of Johannessen's concept to the word skill may cause confusion. The word skill is used as an aspect of knowledge, as a kind of knowledge that musicians possess, develop and speak about. Skill, described as a kind of knowledge for musicians, can also be problematized. The term skill can give the impression of a detached knowledge, as 'how fast a musician can play a scale'. However, in this thesis, skill is used for musicians' technical and performed musical knowledge. Skill is the knowledge required to be able to execute a task, and skill in this sense cannot be clearly divided into technical skills and knowledge. However, some aspects can be described as mainly technical skills and other as mainly musical skills.

1.4 The structure of the thesis

The thesis has seven chapters. In Chapter 1 the aim and research questions are presented. Previous research is also presented in this chapter. The objective of the presentation of previous research is to contextualize the thesis in the contemporary research and state how the thesis may contribute to the body of knowledge.

Chapter 2, the background chapter, presents material and research that will inform the findings from the interviews presented in Chapter 5. It is divided into three sections and a summary. The first section deals with the harp as an instrument from a practical and historical perspective. The second section deals with the orchestral harp part from a practical and historical perspective. The third section deals with contextual issues of orchestral playing as well as educational aspects.

Chapter 3 presents the theoretical perspective. It is divided into four sections and a summary. The first section deals with questions of knowledge, the second section with questions of learning. The third section relates individual issues and collective issues to each other. The fourth section focuses on the space for musical interpretation.

Chapter 4 presents different methodological issues and is divided into eleven sections. These sections deal with different aspects of methodology mainly related to procedure and choices made by the researcher.

In Chapter 5 findings from the interviews are presented. It is divided into four sections and a summary. The categories chosen are based on practical issues of being a harpist in an orchestra, physical and musical interpretive space, the people in the orchestra and qualities skilled musicians have.

In Chapter 6 the findings presented in Chapter 5 are related to the research questions, the theoretical framework in Chapter 3, and the background material presented in Chapter 2. The aim of Chapter 6 is to deepen the understanding of the issues in the thesis by connecting these chapters. The chapter is divided into four sections and a summary.

The aim of Chapter 7 is to create a structural understanding of the issues in the thesis. Concluding remarks on epistemological issues, music education and orchestral practice are presented as well as suggestions for further research. The thesis ends with a coda where the main findings regarding musical freedom and orchestral playing are recapitulated.

Chapter 2.

The harp, the part and the orchestra

Three aspects of orchestral harpists' working situations are presented here under three headings; the harp, the orchestral part, and the orchestra. These areas represent the tools the musicians have and the environment in which musicians work. Under the heading *The harp,* different practical issues associated with the instrument are described such as how the pedals work, the different kinds of harps that harp parts have been written for, and other practical instrument-specific issues. Under the heading *The orchestral part,* issues concerning the orchestral part are described, for example, composers' knowledge and information available from books on instrumentation, as well as harpists' preparation of the part before playing. Under the heading *The orchestra,* issues regarding orchestral playing are described such as the harpist's relationship to the harp while playing, the harpist's relationship to the conductor while playing, working conditions, and educational issues. These tools and situations have been described in autobiographies, interviews published in books, and books for professional purposes, as well as research in associated areas.

2.1 The harp

The modern double action harp is more commonly known as the pedal harp. Harps used in orchestras today usually have 47 strings and an extended soundboard (Marson, 2005). The 12 bass strings have copper, nickel or silver coated steel centres. The rest of the strings are made of gut. Occasionally nylon strings are used, usually at the top of the harp. The C strings are coloured red and the F strings coloured blue in order to make it possible to find the right strings when playing. There are rare exceptions to this practice. Accidentals are obtained by the use of pedals, described below. In this section, different harp-instruments and problematic instrument-specific issues also are described.

2.1.1 The pedal system

Getting accidentals through a system of pedals that affects the strings is unique to the harp.[1] The harp has seven pedals, one for each tone in the scale: C, D, E, F, G, A and B. Counted from the left, the order of the pedals is D, C, B, E, F, G, and A. These pedals have three different positions; for example, the C pedal can be set in C-flat, C, and C-sharp. This does not refer to keys. The left foot controls three pedals: D, C and B; and the right foot controls four pedals: E, F, G and A. A harpist who is preparing to play a piece in B-flat major would set the pedals at D, C, B-flat, E-flat, F, G and A. If, for example, an F-sharp is needed, the F pedal must be changed to F-sharp. The number of possible settings for the pedals are many; Marson (2005) starts with counting the possible settings for a simple chord:

> The C string can produce C flat, or natural, or sharp. Similarly the E and G can each supply one of three notes (repeated in every octave). Thus three innocent-looking strings may sound not one predictable chord, but any of twenty-seven possibilities. A four-note chord presents 81 such chances. Five notes within the octave give 243 combinations, and 6 yield 729 chords. When all 7 strings (A to G) are played together (or in rapid succession, as in a glissando) the number rises to a staggering 2,187 scales. It is no wonder that occasionally errors occur in performance, with the odds at 2,187 to 1. (Marson, 2005, p. 79)

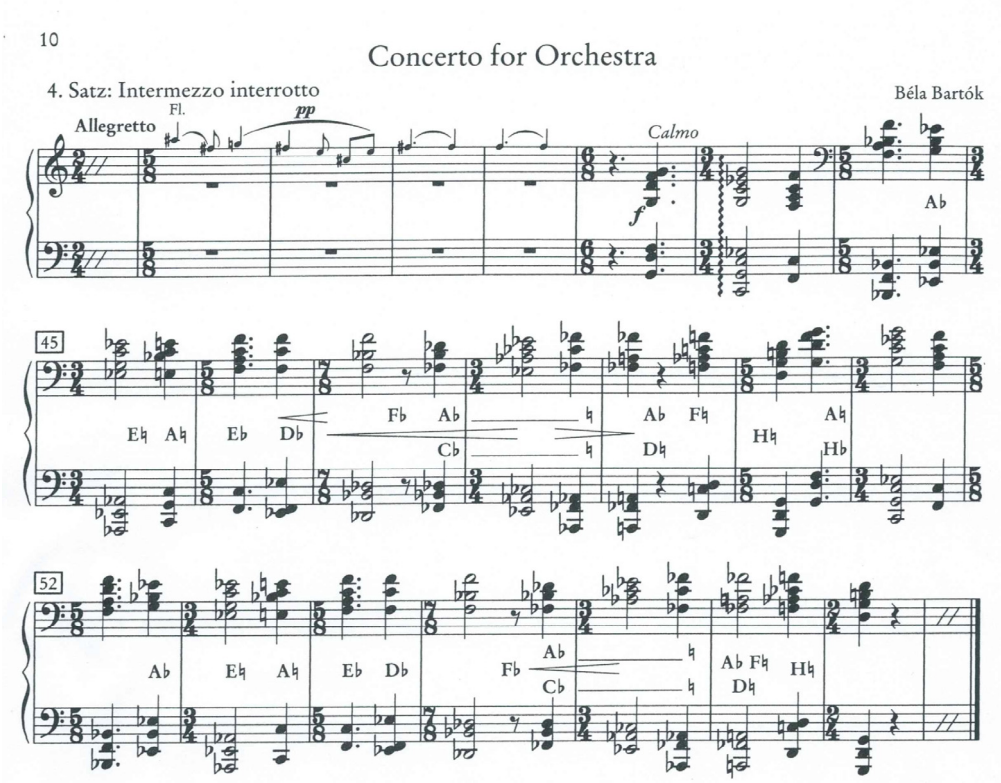
There are several difficulties related to the system of pedals. One is the need to mark the pedal changes in the part before playing, which makes the harpist unable to sight read in most cases. Since a pedal often has to be changed before and after the actual note is played, practicing and performing include the additional difficulty of thinking about accidentals in other places than when the notes they affect occur. It is not possible to see on the string or feel with the fingers if the string is in sharp, flat or natural positions. If the harpist makes a pedal mistake it might be difficult to correct it and keep up while playing in the orchestra. The technical demands of the pedal work seem to be the main difficulty in a harp part. The harpist Sidonie Goossens recalls the frustration of preparing pedals and learning pieces.

> When you first read through a work in rehearsal you can fake it, but then you have to bring it home and study it. I would spend hours learning something new and working out my footwork. Norman would sit here by the fire and say it sounds like a child picking out her notes. I like a little bit of intellectual challenge, that you get from new works; but the most difficult piece in the whole of the repertoire remains Wagner's 'Fire Music' – purely chromatic, the most atrocious piece of harp writing! (Interview with Sidonie Goossens, March 10, 1993, in Rosen, 1993, p. 405)

[1] It can be noted that the kettledrum, or timpani, have pedals that change pitch (Bowles, 1995).

As Goossens observes, marking pedals in the part and practising pedal changes are important issues in harp playing that are very time consuming. Another aspect is how the composer wrote the part: 'Delius never learnt to write for the harp. His pedalling was awful and I had to spend hours rewriting the parts' (Interview with Sidonie Goossens, December 10, 1992. Rosen, 1993, p. 75).

Harpists have to write all changes of accidentals in the part beforehand to be able to change pedals in a part. Usually these changes are made in other places than when the actual note is played. To play a note with an accidental therefore has three actions; to change to the right accidental – for example, F to F-sharp, to play the F-sharp, and to change to the next setting – for example, back to F. For example in the *calmo* section of the fourth movement of Bartók's *Concerto for Orchestra,* the harp changes 30 pedals during 17 bars (Example 2.1).



Example 2.1. Excerpt from Bela Bartók's *Concerto for Orchestra* (Konhäuser & Storck, 1994, p. 10).

2.1.2 Other kinds of harps used in orchestras

Carter and Levi (2003) claim that the term *orchestra* for a specific ensemble of musicians becomes a useful terminology for describing an ensemble form from the 17th century and onwards. They also make a distinction between the orchestra before 1800 and the orchestra after 1800. This is consistent with the use of different kinds of harps, as the pedal harp was developed and came into orchestral use during the end of the 18th century and beginning of the 19th century (Clark, 2007). As Carter and Levi (2003) point out, the development of the orchestra, and orchestral institutions, are dependent on the development of music education, the innovations in music instrument design and different standardisations such as tunings and temperaments. During the 19th century the orchestra became more clearly divided into concert orchestra and theatre orchestra (Spitzer & Zaslaw, n. d.). The modern symphony orchestra was formed at the end of the 19th century. According to Carter and Levi (2003), the modern symphony orchestra developed 'an increasing standardisation in terms of size, instrumentation, employment structures, and repertorial policy' (p. 13). Spitzer and Zaslaw (n. d.) suggest the following definition of orchestra:

> (*a*) Orchestras are based on string instruments of the violin family plus double basses.
>
> (*b*) This core group of bowed strings is organized into sections within which the players usually perform the same notes in unison. This practice of doubling string instruments is carried out unequally: there will almost always be more violins than lower strings.
>
> (*c*) Woodwind, brass and percussion instruments are usually present, in numbers and types differing according to time, place and repertory.
>
> (*d*) Orchestras of a given time, place and repertory usually display considerable standardization of instrumentation. Such standardization facilitates the circulation of repertory among orchestras.
>
> (*e*) Most orchestras are standing organizations with stable personnel, routines of rehearsal and performance, an administrative structure and a budget.
>
> (*f*) Because orchestral music requires many instrumentalists to play the same thing at the same time, orchestras demand a high degree of musical discipline. Such discipline involves unified bowing, the ability to play at sight and strict adherence to the notes on the page.
>
> (*g*) Orchestras are coordinated by means of centralized direction, provided in the 17th and 18th centuries by the first violinist or a keyboard player and since the early 19th century by a conductor.

Different kinds of harps have been used in orchestras during the centuries (Clark, 2007; Rensch, 2007). During the 17th century *arpa doppia* and *arpa a tre registri*, instruments

with two or three rows of strings, were used as continuo instruments in operas (Fabris, 1991; Galassi, 1991; Lawrence-King, 1991). For example, the harp part to Monteverdi's opera *L'Orfeo* was written for arpa doppia. Handel wrote harp parts in operas and oratorios for *triple harp*, an instrument with three rows of strings similar to the arpa a tre registri.

Systems with pedals began to be developed around the beginning of the 18th century and several luthiers worked on improvements and experiments with pedal systems during the 18th century (Clark, 2007; Rensch, 2007). The *single action harp* was used during the 18th century and the first part of the 19th century. On a single action harp, the pedals have two possible positions. A single action harp with seven pedals tuned in E-flat major had D, C, B-flat, E-flat, F, G, A-flat with pedals counted from left to right. If all pedals were depressed it would have D-sharp, C-sharp, B, E, F-sharp, G-sharp, A. This made it possible to use the single action harp in keys from E-flat major, with three flats, to E-sharp major, with four sharps, and all the keys in between. Other keys, with more flats or more sharps, were possible with enharmonic changes. For example, to play a B-flat minor chord the harpist has to play B-flat, C-sharp and F natural. Sebastian Erard patented the *double action harp* in 1810, and the new pedal system made it easier to play in all keys. These two systems of pedals were used in parallel during the first half of the 19th century. According to Zingel (1992), the single action harp was easier to play and had a clearer, brighter and not as resonant sound as the double action harp. Today the term double action harp is seldom used, this probably due to the fact that the single action harp is not commonly used.

The American harp makers Lyon & Healy, a company that started building harps in 1889, were the first harp builders to extend the soundboard of the harp (Marson, 2005). The extended soundboard gave a louder but less clear sound in the bass register than the straight soundboard. In Europe the unextended soundboard was common into the second half of the 20th century (Zingel, 1992; Marson, 2005). There are still experiments with different ways of solving the mechanical and technical problems with the harp. One of the more recent experiments is Camac's *Memory harp*, a harp with programmed pedal settings, which was introduced in 1984 (Marson, 2005). This instrument never came into production.

The *Pleyel harp*, a chromatic harp with two crossed rows of strings, was introduced in 1897 (Marson, 2005). The Pleyel harp has the advantage of being chromatic without using pedals but some effects such as the typical harp glissando cannot be executed on it. The Pleyel harp also produced less sound than the pedal harp and fingerings were difficult in some keys (Widor, 1904/1946). It was used in parallel with the pedal harp in the beginning of the 20th century but never became as popular. The *lever harp* (folk harp, troubadour harp, Celtic harp, small harp) is a small harp with fewer strings than a pedal harp, usually less than 36 (Wooster, 2006). It has levers attached to each string that change the pitch one semitone (Cunningham, 2006). This harp is often used in folk music, in early music and by beginning harpists. It is seldom used in orchestras.

Research on interpretation of early music has been conducted during the entire 20th century, and since the beginning of the 1970s the early music movement has changed the way early music is interpreted in general (Lawson, 2003; Spitzer & Zaslaw, n.d.). Since this demands instruments and playing techniques that are different from the ones used in symphony orchestras today, it has created a period-music musician profession that is different from the 'modern' musician profession. For example, the harp parts from Monteverdi's *L'Orfeo* and Handel's works are seldom performed on a double action harp today but are usually played on replicas of baroque instruments. Another change is that several of these early harp pieces and parts had been rewritten and embellished to suit the style of the time, such as the cadenza from *Lucia de Lammermoor* that was edited by Henriette Renié (1946/1966) in the second volume of her method. Today a different approach closer to the original version is preferred (see 2.2.3). The early music movement has changed the performance of baroque works but is also changing the performance of 19th century music. Probably some earlier harps will come into fashion such as the single action harp for 18th century and early 19th century music and the early double action harp without an extended soundboard in 19th century music.

As a consequence of the different harps and different technical and mechanical solutions it may be noted that some of the parts used in orchestral repertoire today were written for earlier instruments such as the different baroque harps, the single action harp, the Pleyel harp, rather than for today's prevailing double action harp.

2.1.3 Practical instrument-specific problems

Harpists are responsible for tuning their instruments. Different factors affecting the tuning of harps include the material the strings are made from, the humidity, the temperature, the condition and age of the harp, and if the instrument has been moved (Fedson, 2006). Harp strings are made from different materials: gut, nylon and metal (Waltham, 2010). These materials react differently to humidity and temperature.

Historically, the breaking of harp strings was a huge problem for harpists and it could make it impossible to play. For example, Rensch (2007) describes an occasion when Naderman and Dussek played a concerto for harp and piano and Dussek had to finish the piece alone on piano since so many strings broke on the harp. Marie Goossens (1987) heard a concert in the 1920s when so many strings broke due to the humidity that the harpist could not play the cadenza from *The Nutcracker*. The quality of gut strings improved during the early 20th century so strings did not break as often as they had previously and it was easier to keep the harp in tune. Nylon was invented in the 1930s and it is possible that the earliest use of nylon strings for harps was in 1939 (Marson, 2005). Nylon strings do not break as easily as gut strings but do not have the same sound quality (Yeung, 2006). Metal bass wires probably began to be used during the early 19th century (Rensch, 2007). In the late 20th century portable tuners became

available. These made tuning easier especially in the context of orchestral playing where harpists can be disturbed by surrounding sounds (Marson, 2005). Fedson (2006) also suggests the use of a microphone or a contact pick-up with the tuner. When pulled, harp strings change pitch, thus the initial pitch is not the same as the pitch ringing. Waltham (2010) claims that this pitch change can be a semitone in the high register. The strings also have different decay times, which are not only related to the pitch but also to individual strings (Waltham, 2010). Two similar strings next to each other can have different decay times. Salzedo (1918/1948) remarks that the resonance of the harp is different from most other instruments since it sustains for a long time and often has to be damped.

A harp needs to be regulated in order for proper tuning to be possible. How often it should be regulated depends on how frequently the harp is used. Regulation includes changing pedal felts that wear out and adjusting the mechanism (Cunningham, 2006). The main objectives of regulation are to adjust intonation and reduce noise (Yeung, 2006). When a harp gets older it might be more difficult to obtain good intonation due to the wear of the instrument. But Swanson (1984) claims that the climatic changes due to the transportation of harps are what affect the instruments most. Thus an instrument used by a professional harpist tends to last a shorter time than an instrument used by an amateur harpist who rarely moves the instrument.

Transportation presents additional practical problems (Wooster, 2006). The harp should be transported without risking damage, which requires a great deal of planning and knowledge from those transporting it (Yeung, 2006). Swanson (1984) and Yeung (2006) describe different ways of transporting a harp: by vehicles like a station wagon or mini-van, by bus and by shipping. They also describe different ways to load a harp into a vehicle by one or two people. The harpist Marie Goossens (1987) mentions ways to transport the harp in the early 20th century. In addition to transporting harps by horse and carriage it was also possible to carry harps in a harp box on trains. Shorter distances in London were usually covered by taking the harp with a leather strap on the back and transported by walking or by travelling by public transport. This was called '[u]mping the 'Arp'' and was the practice for many years. The risk of damage was ever present, and Goossens was relieved when taxi services started. The ability to use one's own car to transport the harp changed working life for harpists. Harpists in London were expected to use their personal instruments, and to transport the harp safely was necessary. Another invention that came into use towards the second half of the 20th century was the harp trolley or dolly, which made the harpist more independent (Marson, 2005). From a historical perspective it is possible that the problems with transportation of harps affected the use of harps in the orchestra, and also the rehearsal attendance. Harp transportation can still be seen as a problem for harp students (Rollo & Bowles, 2006).

2.2 The orchestral part

The orchestral performer's part is the primary tool for the performance of a particular piece in the orchestra. But, although it may be the primary tool, it must always be considered in the light of the context in which it was written, the composer who wrote it, and the information, knowledge and influences the composer had when writing the part. To understand the part it is also important to understand how the harpist interprets the part, how the harpist prepares the part, and how the harpist edits the part.

2.2.1 The harpist and the composer

On one hand harpists want composers to write for their instrument. On the other hand they seem to think that most composers are unable or uninterested in writing idiomatic or even playable parts for harp. Many harpists have made attempts to explain the difficulties of harp playing and harp scoring. Harpists have taken various approaches to composer education. One is through personal contact with composers, in person or by correspondence. Another is to publish books on scoring for harp. These books can be seen as a complement to books on orchestration. They also hope that composers will read and understand problems presented in books mainly aimed at harpists. Forsyth calls attention to the problem in his book on orchestration: 'Some of the great masters have written without much understanding for the harp' (1914/1982, p. 475).

Personal contact between harpist and composer offers the best way for the composer to gain knowledge about the harp according to the harpist and composer Tournier (1959) who refers to Parish-Alvars' and Hasselmans' impact on their contemporary composers. Adler (1982/2002), in his book on orchestration, recommends that composers consult a harpist when in doubt. A different way of approaching this problem, when direct contact with the composer is no longer possible, can be seen in Rose's (2007) correspondence with Peter Bartók, son of Bela Bartók, who at the time was correcting and preparing new editions of Bela Bartók's works. She had tried to solve four bars in Bartók's *Violin concerto* that were impossible to play, and she suggested solutions but was not satisfied with the result. In the end Peter Bartók changed the instrumentation and moved some notes to the viola part to make it possible to play the harp part.

Several harpists have written books that can complement other books on instrumentation. One of the first is Zabel's (1894/1980) *Ein Wort an die Herren Komponisten über die praktische Verwendung der Harfe im Orchester*. He observes that harpists often revise parts, and that the composer who wrote the original part might think the harpist had played the original in performance. Thus, misunderstandings persist and difficulties increase. In his book Zabel aims to explain to composers how the harp works technically and to expand composers' knowledge about the harp by

explaining and giving examples of how to write and how not to write for harp. He finds that composers often have little or no knowledge about the harp. Tournier (1959) also addresses himself mainly to composers in the second part of *The harp*. He describes how the harp works technically and he explains effects that are idiomatic to the harp and their notation, with numerous examples. He also gives examples of how not to write for harp and why. This second part of the book can be seen as a complement to other books on instrumentation. Other harpists have written similar volumes addressed to composers, for example, Chaloupka (1979/2002) who writes in his dedication, and in his coda, that he hopes it will '…encourage a profusion of creative, logical harp scoring' (p. iii; p. 44). He covers subjects that affect harp scoring such as how the pedals work, harp effects, and practical issues such as how to group bars in an orchestral part. In *Writing for the pedal harp,* Inglefield and Neill (1985) describe different kinds of notations and how they are executed, especially in contemporary music. Their book is aimed at harpists as well as composers.

Shameyeva (1994) claims that not only is the personal contact between harpist and composer important but also the education in a national school of performance. It is as vital to educate harpists interested in performing contemporary music as it is to have composers that write music. Harpist Vera Dulova said that there must be a mutual understanding between performer and composer (in Shameyeva, 1994). Shameyeva stresses that the opportunities for composers to hear high-level performers are vital to their motivation to write for the instrument. She observes that much frequently-performed solo repertoire was written by harpist-composers who are able to write idiomatically for their instrument. Composers who lack knowledge about the harp often write music that puts the harp in a disadvantageous light. Graae (1960) asserts that contact between composer and harpist is essential for writing music for harp. She also notes that music for harp is often written in countries where the education of composers includes experiences with all orchestral instruments, and thus connects education and composing. Love (2013) suggests that it is not only important for an orchestral composer to have knowledge about instrumentation, but also to have knowledge of orchestral culture. The only way to obtain knowledge about orchestral culture is to work with orchestral musicians.

Salzedo, who was influential as a harpist, as a composer, and as a member of several organizations for composers, presents in his *Modern study for the harp* the hope that not only harpists but also composers and conductors will consult this work (Salzedo, 1918/1948). Salzedo's aim in general was somewhat different from other harpists' way of addressing composers, since he wanted to develop a new way of writing for the harp, a new way of playing the harp, and a new way of thinking of the harp as an instrument. He developed new effects and new notations for harp effects, and also founded a new school and technique of playing the harp. Some of Salzedo's effects and notations are still in use and others appear occasionally (Carman, 1992; Salzedo, 1918/1948; Salzedo & Lawrence, 1927/1929). Salzedo and Lawrence (1927/1929), for example, recommend that composers notate harmonics where they sound but most composers

notate harmonics where they are played. This is an issue that causes confusion among harpists and conductors, since they have to know what system the composer used (Love, 2013). In general harpists prefer harmonics to be notated where they are played (Chaloupka, 1979/2002). In their *Method for the harp,* Salzedo and Lawrence (1927/1929) recommend that composers and conductors learn more about the harp in a more practical way:

> It is to be hoped that every composer, conductor and musicologist will become thoroughly familiar with these Preludes, not by studying them in a visual manner, but by actually playing them on the harp. They will then realize that the so-called "limitations" of the harp result from a lack of information (Salzedo & Lawrence, 1927/1929, p. 1)

Although the preludes are written for beginners it must be noted that they are quite demanding technically and would require a great deal of practising for a beginner. Salzedo also influenced contemporary composers. For example, Pierre Boulez took harp lessons and, inspired by Salzedo, Luciano Berio changed his way of composing for harp (Owens, 1993).

In *The harp in the orchestra, a reference book for harpists, teachers, composers and conductors*, Rose (2007) aims to present solutions for harpists to difficult problems occurring in orchestral parts, and to inform composers and conductors about the kinds of problems that occur. One of her main points is that composers often write for harp as they write for piano and she points out the differences between the instruments. Rose also emphasizes that a well written harp part should not only be idiomatic but also well orchestrated, or as she puts it 'composers (…) not only knew how to write for harp, but where to write for it' (p. viii). Graae (1960), in *Harpen – dens muligheder och begrænsning* (The harp – its possibilities and limitations), emphasizes that it is not possible for a composer to come to an understanding of an instrument through reading only, but must also engage in extensive listening.

When the earliest harp parts were written, harp and keyboard instruments were treated similarly. In Kastner's (Woodward, 2003) book on instrumentation published in 1837 he states that composing for the piano and for the harp is done in the same manner. He also claims that music written for one of the instruments could often be played by the other. Harp and piano were considered interchangeable. Berlioz (Berlioz & Strauss, 1843/1991) writes in his treatise that the harp and the piano are different instruments and should be treated differently when scoring. It is also known that harp parts sometimes were played on a keyboard instrument in the orchestra (Berlioz, 1870/1981). Some harpists during the late 18th century and the early 19th century were known to play the harp with five-finger technique in order to be able to play keyboard parts and orchestral parts on harp (Marson, 2005; Zingel, 1992). Many of the problems with harp parts arise due to composers writing harp parts as they would write piano parts. Rose (2007) claims that the similarities are notation in two clefs and instrument range. Differences include the number of fingers used (the harpist uses four

on each hand and the pianist uses five on each hand), the fingerings are different, and the playing position is different. Even how the sound is produced is different from the piano – the harpist has to place the fingers before playing, whereas the pianist can place and play in one striking movement. This makes it difficult to play the harp as fast as the piano. The harpist is also dependent on being able to see the strings since it is not possible to feel the difference as one can with the different keys on the piano. The construction of the instruments affects performance of accidentals since a harpist has to change pedals with the feet to be able to play chromatic changes, and this makes the harp slower and more limited. However, the pedal system also makes it possible to perform typical harp effects, for example, by using enharmonic settings of the pedals when playing glissandi.

How the parts are written and performed has changed over the centuries. Graae (1960) cites an interview where the harpist points out that it is important that harpists are challenged to develop, but that demands should be reasonable and not work against the principles of the instrument.

2.2.2 Treatises on instrumentation

Books on orchestration give limited information on how composers actually write for harp, but they indicate what information and experiences of writing for harp these writers, composers, arrangers and music theorists find important. This section notes three aspects: that information travels from book to book, that even though most information is correct there are misunderstandings, and lastly, what these writers say about the role of the harp in the orchestra. Most information in books on instrumentation is about how the pedals work and how typical harp effects are notated and executed; this is not addressed in this section.

Several of the treatises on instrumentation are related to each other. The central instrumentation text from the 19th century is Berlioz' (Berlioz & Strauss, 1843/1991) *Treatise on instrumentation.* Several other treatises follow on from it. Widor's (1904/1946) treatise was written as a supplement to Berlioz' treatise. Strauss made a new edition of Berlioz' treatise with his own comments in the beginning of the 20th century. Other writers also edited works with their own comments, for example, Jacob (Widor, 1904/1946) made a new edition of Widor's treatise with his own comments. Since Berlioz' and Widor's treatises were closely connected it is no surprise that Widor often refers to Berlioz. Forsyth (1914/1982) also refers to Berlioz and Widor in his treatise.

One point of information that travels from book to book is about the tuning of the harp. Most books on orchestration inform that the harp is tuned in C-flat major, which might give the impression of the harp being a transposing instrument. Probably the practice of referring to the double action harp as tuned in C-flat major was a way of pointing out the difference from the single action harp that usually was tuned in E-flat

major. Berlioz (Berlioz & Strauss, 1843/1991), in his explanations of how to write for harp, seems to think that the harp is constantly in flats while playing, unless a sharp or natural is needed. He also states that a pedal can be raised a whole tone or a semitone and that he prefers writing harp parts in flats. Other writers describe C-flat major as the 'natural' key for the instrument (Forsyth, 1914/1982; Jacob, 1931/1947; Mancini, 1962/1986; Piston, 1955/1973; Widor, 1904/1946). The writers of later books on instrumentation are aware of the problems when describing the harp as tuned in C-flat major when explaining the pedal system. Del Mar (1983) has a reservation that the harp is only 'academically speaking' tuned in C-flat major. Blatter (1980/1997) and Adler (1982/2002) express similar reservations.

To a harpist, the practical tuning of the instrument and the instrument's tuning are two different things, thus it might be that there is confusion between these two things among composers. When a harp is not in use the pedals are usually left in C-flat major to put as little strain on the strings and mechanism as possible. When playing, the harpist sets the pedals to suit the key and the piece played. The tuning of an out-of-tune harp is a different matter. There have been disputes among harpists since the 18th century whether a harp should be tuned in C-flat major or C major (Marson, 2005). When the tuning pegs are turned with the pedals in flats the strings are not affected by the mechanism of the harp, therefore some harpists tune the harp in C-flat major. On the other hand if a harp is not well regulated the keys furthest from C-flat major will not be in tune. Some harpists therefore prefer to tune the instrument in C major. Other harpists tune in C major but when they actually turn the peg they release the pedal to flat.

On the modern pedal harp the mechanism affects the quality of the tone very little; probably this was not the case with earlier harps. In most of the books on orchestration the writers advise composers to write in flats rather than sharps due to the tone quality. Adler (1982/2002) asserts that flat keys have more sound potential, but that a good harpist can overcome this problem. Some composers have misunderstood the information about keys and think that the harp is easier to play in flats than sharps (Marson, 2005).

All of the writers of instrumentation treatises are well informed about the harp, even if it is sometimes difficult even for a harpist to understand the explanations about how the pedals work. Some extreme situations are described, such as Blatter's (1980/1997) suggestions to move two pedals with the same foot, or how to dampen certain notes in a glissando and Piston's (1955/1973) suggestion to move a pedal with the wrong foot. Another example is playing four harmonics in the left hand as Forsyth (1914/1982), Del Mar (1983), and Widor (1904/1946) suggest. These technical solutions might work under certain conditions, or for some, but not all, harpists. It is possible that an aspiring composer may write parts that are difficult or impossible to play from consulting these books.

There are odd suggestions, such as Piston's (1955/1973) idea that the harpist is able to tune while playing. There are also some errors, such as Adler's (1982/2002) information that the strings are attached to a tuning peg at the top and to a pedal at the bottom and that the G-strings on a harp are usually coloured blue. Harp strings are attached to the *soundboard* at the bottom and the *F*-strings are usually blue. Writers who include information on the history of the harp often have errors such as Adler's (1982/2002) descriptions of harp types, Del Mar's (1983) remarks on composers that used the harp in orchestra and Forsyth's (1914/1982) remarks on harp history. The orchestral excerpts are not always consistent with the text. Adler (1982/2002) writes, for example, that it is not possible to play more than one harmonic at a time in the right hand but shows an excerpt with two for the right hand. However, in general these treatises explain how the harp works and explain effects well. Books on orchestration from the late 20th century by Del Mar (1983), Adler (1982/2002), and Blatter (1980/1997) try to describe the practical context including the harpist who will execute the effects, and the orchestra where it will be done.

While these treatises present their writers' and composers' view of the harp, they also represent musical and stylistic preferences of the time. Kastner's (Woodward, 2003) suggestion for orchestral use of harp is that it should mainly accompany solos, romances and recitatives. Kastner's *Traité général d'instrumentation* was published in 1837. The treatise describes the single action harp and the double action harp, but he suggests that composers write for single action harp when writing for orchestra since at the time, it was still more common than the double action harp. The preferred use of the harp as an accompanying instrument for solo instruments was fashionable at the time, perhaps due to the single action harp's relatively quiet sound. On the other hand Berlioz (Berlioz & Strauss, 1843/1991) suggests that the harp should be integrated into the orchestral texture and not used only as an accompaniment to solo instruments. Berlioz' *Symphonie Fantastique*, written in 1830, exemplifies this different use of the harp in the orchestra. Berlioz preferred the double action harp, which had a louder sound and more chromatic possibilities than the single action harp. Widor's (1904/1946) *The technique of the modern orchestra* was first published in 1904 and written as a supplement to Berlioz' book on instrumentation. Even though he refers to Berlioz' treatise he suggests how to think differently when writing harp parts: 'The most powerful effects are produced by the simplest means. True. But is that a reason why we should always follow a beaten track, and confine ourselves to one and the same *arpeggio*?' (Widor, 1904/1946, p. 135). Widor also finds inspiration from his contemporary harpist-composers such as Alphonse Hasselmans' solo pieces for harp. Early 20th century French music presents a new way of orchestrating for harp, especially the music by impressionistic composers such as Maurice Ravel and Claude Debussy. In the same year that Widor published his book, Richard Strauss (Berlioz & Strauss, 1843/1991) made a new edition of Berlioz' treatise in which he added his own remarks. With this new edition Berlioz kept his central role.

A few years later, in 1913, Rimsky-Korsakov's (1913/1964) *Principles of orchestration* was first published. He regards the harp primarily as an instrument used for accompaniment or for harmonic use in the orchestra, as 'more an instrument of colour than expression' (Rimsky-Korsakov, 1913/1964, p. 29). Forsyth's (1914/1982) *Orchestration* was first published in 1914 and offers a similar way of looking at the harp: as an instrument that is adding something to the orchestra rather than as an instrument integrated into the orchestra.

> In translating from Pianoforte to Orchestra you will often find that the music of the original is enclosed and defined by means of a series of arpeggio-like passages. This is the nature of the Pianoforte. The mere transliteration and rearrangement of these Pianoforte passages for Harp against an orchestral background is rarely satisfactory. The Pianoforte passage is the music: the harp part merely gives the effect of *an addition* to the music. (Forsyth, 1914/1982, p. 475)

A similar view is expressed in Jacob's (1931/1947) *Orchestral technique: A manual for students* first published in 1931. He sees the harp as an instrument suitable to 'enrich an orchestral background' (p. 75) but not as a melodic instrument or an instrument suitable for a solo. Piston's (1955/1973) *Orchestration* was first published in 1955. He seems to regard the glissando as a symbol for what he dislikes in orchestration, but on the other hand most of his text treats different kinds of glissandi.

> This characteristic feature of harp technique is no less effective for having been abused. The overworked up-beat harp glissando in the orchestral tutti has become one of the worst platitudes of music, but this fact should serve to direct attention to other more tasteful and varied possibilities in the use of glissando on the harp. (Piston, 1955/1973, p. 328)

This view seems to be shared by Mancini (1962/1986) whose *Sound and scores* first was published in 1962. It deals with arranging for what he calls 'the commercial field'.

> Unfortunately the harpist in the commercial field is called upon to use only a minute part of his full capabilities as a player. If you decide to get a little fancy with your harp part, have no fear that it will not be played. (Mancini, 1962/1986, p. 179)

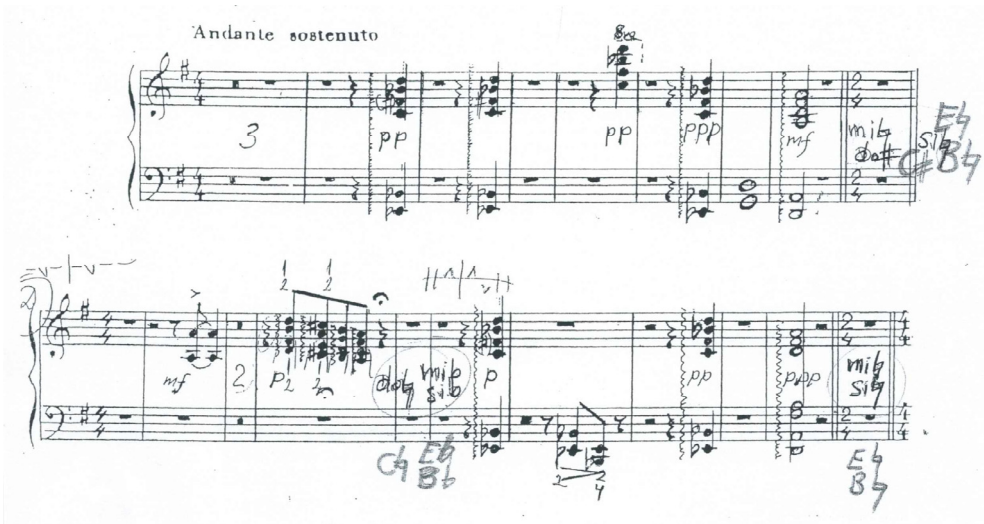
Possibly this is an explanation to harpists that harp parts in 'the commercial field' might consist mostly of glissandi and, indeed, most of Mancini's own text is about different kinds of glissandi. Blatter's (1980/1997) *Instrumentation and orchestration* was first published 1980. Blatter expresses the view that an effective way of scoring for harp in the orchestra is to use single chords, single notes or other colourings rather than using the harp as a solo instrument. Adler's (1982/2002) *The study of orchestration* was first published in 1982. He not only deals with the harp and its possibilities, but he also writes about the relationship between the harpist and the composer: 'Harpists are quite willing to try out new ideas as long as the composer has a well-grounded understanding of the instrument's basic constraints' (Adler, 1982/2002, p. 92). Adler (1982/2002)

considers the harp to be suitable for melodic playing, as an accompanying instrument and as an instrument doubling other parts.

From these treatises on instrumentation different ways to look at the harp are evident: one may see it as an instrument adding colour to the orchestra, as an instrument used to accompany solo instruments, and lastly as an instrument that is integrated into the orchestra. Within the orchestra, soloistic playing is not considered the harp's foremost role.

2.2.3 Editing harp parts

Harpists customarily mark their parts before rehearsals with, for example, pedal markings, fingerings, and enharmonic changes (Example 2.2). It is not uncommon to change passages in parts. There are several reasons to change or rewrite harp parts. One is to be able to play a part in the preferred musical style. Another reason to change harp parts is to execute the part according to tradition. Both of these reasons to edit parts can be regarded as part of a tradition or a musical context. Another reason to change a part is to try to adapt the part to the effect the composer probably wanted, and the last reason is to make changes to make the part playable. These last two reasons can be related. It is also possible that errors in a part must be corrected (Rose, 2007).



Example 2.2. Excerpt from Giacomo Puccini's *Turandot* showing multiple layers of markings by different harpists (excerpt from photocopied part in possession of the author).

There are different ways the information about changes in parts is transmitted; one is from teacher to student, another is in different published volumes on orchestral excerpts, a third is notations in previously used parts, and the last is contact between

colleagues. The solutions Rose (2007) presents in her book mirrors the informal network that provides practical solutions between colleagues. She sometimes recounts who provided the solution, and tells how she contacts a harpist likely to have a suggestion regarding problems in a particular work. Bullen (2008) writes explicitly 'Bullen Edition' in her edition of orchestral parts. This might be an indicator of awareness of contextual use of parts since all solutions are not valid in all orchestras. It may also be an indicator of validity for the solution since it is made by a renowned contemporary orchestral harpist, as well as giving the harpist credit for the solutions.

Published orchestral studies for harp commonly include excerpts requiring changes (Bullen, 1995/2009; Bullen, 2008; Dulova, 2004; Konhäuser & Storck, 1984; Renié, 1946/1966; Rose; 2007; Zingel, 1977). These changes might be adaptations for tradition or solutions to difficult passages in parts. Publishing orchestral excerpts becomes a means of collegial correspondence over time and place, and also serves as a way to form a tradition. Orchestral studies are edited for different reasons: as studies for students, as examples of test pieces for auditions, and as references of possible ways for orchestral musicians to solve problems appearing in parts. They are also useful sources of information about orchestral repertoire. Davis (2004) finds it important to study orchestral excerpts. He does not agree with teachers who recommend learning an instrument only by the study of excerpts, although he finds that the most difficult passages are found in orchestral repertoire, but he believes that the study of excerpts should be part of learning an orchestral instrument. Davis, when describing how to prepare for auditions, claims that the musician should be aware of the tempo, the style and the musical context of the excerpt performed and be able to be flexible when performing it. He advises all musicians to buy books with orchestral excerpts since they have to know all the difficult and exposed passages and solos for their instrument, but he also warns that a lot of these books contain errors that do not occur in the real parts.

Within parts, there may be passages in which the individual must decide how to perform. For example, Del Mar (1983) in his *Anatomy of the orchestra* refers to how a harpist may execute a glissando, regarding speed, 'loops', and range. The reason why the harpist does not play what is written in the part but changes it, according to Del Mar, is often the lack of knowledge among composers about the effect of the glissando, how to write a glissando and how to execute a glissando. However, Del Mar suggests it might also be executed differently because the harpist misunderstood the effect the composer wanted. Del Mar (1983) also finds that the harpist often has to interpret how to perform an arpeggio to make it fit the musical context since it seldom is written how a chord should be played in the part. He is aware of harpists re-writing parts, and gives examples of solutions to difficult passages, for example, by dividing passages between first and second harp. Adler (1982/2002) also notes that harpists do not always play what is in the notated music, presenting *The Nutcracker* cadenza as an example.

Tchaikovsky's harp cadenza in *The Nutcracker* has a special place among pieces that are played differently to the notation, according to tradition. Adler (1982/2002) tells the story behind the tradition of performance of *The Nutcracker* cadenza:

> The story goes that the harpist who performed this cadenza at the premiere, with the composer conducting, suggested this revised performance style, which every harpist from that time on has used; but Tchaikovsky never changed the score to reflect the custom. (Adler, 1982/2002, p. 93)

In the original part both hands are played towards each other simultaneously in semiquavers. Even though the suggestion Adler (1982/2002) shows is the most common, with the arpeggio going downwards in demisemiquavers, there are several other ways of performing it, as shown in orchestral studies. Zingel (1977) gives the same version as Adler, but also a different version with the left hand arpeggio going upwards. He also has two different suggestions of how to execute the ending arpeggio. Konhäuser and Storck (1994) suggest the same downward arpeggio as Adler and the same two ending arpeggios as Zingel. Dulova (2004) presents a version with the arpeggios going downwards in demisemiquavers, and she has an added octave in the bass in the first bar of the cadenza. She also ends with glissandi instead of arpeggios. Bullen (1995/2009) presents a version with a low A in the left hand in the beginning of the cadenza and the left hand arpeggios going upwards in the first bar; from the second bar the arpeggios are played downwards. Bullen's suggestion for the ending arpeggio is slightly different than the suggestions above. Renié (1946/1966) has a different solution in which the semiquavers in the original part are kept but the left hand is relieved of one note of each chord. She also suggests that the cadenza can be executed in sextuplets going downwards. Renié's solutions do not appear in any other source. All of these examples show that there is a tradition of changing the part, but that there are different versions of *how* to execute the part.

To perform in a different style can also be regarded as part of a tradition. An example is the embellished part of the harp solo in *Lucia di Lammermoor* that Renié (1946/1966) presents although she does not give any information about the arranger, which may indicate that it is her own version. Konhäuser and Storck (1994) present a suggestion for an inserted cadenza separate from the part, and also note that there is no cadenza in Donizetti's original part. A later edition, Bullen's (2008), does not have an embellished cadenza. What can be seen as a minor change is the fuller chords compared to the original that Zingel (1977) presents in an excerpt from *Aida*. Many of these changes in parts are not part of the tradition today unless requested by, for example, the conductor or opera director. Some solutions rearrange the part rather than modify difficult passages. Rose (2007) and Lawrence (1962) present a suggestion by Salzedo for the harp cadenza in *Capriccio espagnol* by Rimsky Korsakov. Salzedo changes some of the chords to consist of different notes from the same chords. For example, the original sixtuplet A E A A E A is changed to E A F-flat E A E. On the other hand Bullen (1995/2009) presents the original part with suggested fingerings, and also a short text describing possible interpretations by different harpists and conductors. She does not mention the Salzedo edition.

Some parts are known to be very difficult to play, among them parts by Berlioz, Strauss and Wagner. It is common to make changes in these works and rewritten parts are often represented in books of orchestral excerpts. Berlioz' *Symphonie Fantastique* often appears in orchestral studies. It also has a special place within the harp literature since it was the first work for symphony orchestra to contain harp. Berlioz had a great impact on other composers through both his music and his treatise (see 2.2.2). Surprisingly, in his treatise (Berlioz & Strauss, 1843/1991), he advises against the use of arpeggios in quick tempi for two hands simultaneously – precisely the manner in which he has written the harp parts in the *Symphonie Fantastique*. These arpeggios are also changed in most editions made by harpists. Konhäuser and Storck (1994) suggest dividing this passage, bars 214-215, between the two harps since 'it is almost impossible to play at the original tempo' (p. 13). According to Cone's (1971) comments in his edition of *Symphonie Fantastique,* some manuscripts have the part doubled in octaves and in other manuscripts the part is divided between the two harps. All orchestral studies that contain the *Symphonie Fantastique* have suggestions for changing the part to make it easier to play. Other passages in the *Symphonie Fantastique* have changes: Zingel (1977) omits chords to make a single bass line in both harp parts in several places, and he also changes the melody line in the first harp. Renié (1946/1966) omits some notes in the chords, changes the chords, and on one occasion adds a note to make it easier to play. Blatter (1980/1997) uses an orchestral excerpt from *Symphonie Fantastique* to show the use of two harps in orchestra, it is likely he is not aware that this part often is not played as written.

The works by Richard Strauss and Wagner include parts that frequently have to be changed to be playable and are known among harpists to be unidiomatic. Renié (1946/1966) writes about a passage in *Le Crépuscule des Dieux* or *Götterdämmerung* that '[g]enerally, the 1st Harp part is divided in order to render the passage possible' (p. 219) and shows an extract where the first harp part is divided between the first and second harp. Rose (2007) shows respect for Strauss' new and innovative way of scoring for harp in orchestra.

> These errors in Strauss' scoring are not listed for the purpose of expressing criticism, but for *compassion*! His noble efforts to write for this comparatively new and scarcely understood instrument took courage and imagination. He was not fully aware (nor were his contemporaries) of the structural differences between the harp and the piano, nor the physical differences in the performing technique. Unfortunately, some of the errors exist in the writings of later composers. It still remains the orchestral harpist's responsibility to try to correct or improve composers' intended sounds. (Rose, 2007, p. 71)

Most of Rose's (2007) suggestions for changes in Strauss' scores are to divide parts between first and second harp. If it is not possible, she sometimes suggests radically reducing the part by omitting notes, especially when the same notes occur in other instruments. Richard Strauss writes in his comments on Berlioz' treatise that some parts of Wagner's *Tannheuser* are 'practically impossible to execute' on harp (Berlioz &

Strauss, 1843/1991, p. 140). It is possible that Wagner approved of changes in the parts from the following anecdote told by Strauss:

> A funny utterance of Richard Wagner's to the harpist Tombo is reported. During the first rehearsal of the end of "Rheingold" in Munich, when Tombo sadly declared the harp part to be absolutely unplayable, Wagner said to the excellent artist, "You cannot expect me to be able to play the harp; you see what effects I want to achieve; now arrange your part as you like". (Berlioz & Strauss, 1843/1991, p. 144)

One might think that Strauss' insight into Wagner's difficult harp parts would lead him to write idiomatically since he also writes in his additions to Berlioz treatise: 'The harp should always be treated as a solo instrument, also in orchestra, lest one write unnecessarily notes which are inaudible' (Berlioz & Strauss, 1843/1991, p. 144). Rensch (2007) also refers to Wagner's parts as difficult and cites a lecturer who claims that the parts are so difficult, especially regarding the pedals, that the harpist should not be blamed for making mistakes. Konhäuser and Storck (1994) in the Editor's preface to *Orchester Probespiel* claim that Wagner's writing is not always idiomatic but that Wagner himself probably was open to changes in the harp parts. They also find it probable that Strauss and Tchaikovsky were open to changes in the parts.

Several of the solutions that Rose (2007) presents are changing notes between first and second harp, or dividing a unison part between two harps. In dividing the part, the music is not actually changed except that the part is not doubled. Sometimes changes of fingerings, or moving single notes between the hands, are made to be able to play the part, or to be able to watch the conductor while playing. Enharmonic changes are made to be able to play the part or to avoid awkward pedal changes. On some occasions she suggests that changes should be made by leaving out notes and to reduce the number of pedal changes to make passages playable in a quick tempo. Bullen (1995/2009) finds it important that the harpist can recognize the awkward passages, especially to identify those that were written with the piano in mind, and if necessary change them to the effect the composer had in mind. She claims that phrasing and motion are at times more important than the individual notes written.

> I have often said, what I was most unprepared for as a professional harpist, was knowing when to slave over a part in an effort to honor every single note, and when to bite the bullet and rewrite the part. Even though this subject is rather sensitive, every orchestral musician must learn to trust their judgement and find solutions. The overall effect dictates whenever changes are necessary. This does not need the conductor's approval. Again, if the composer's intent is achieved, changes will not be noticeable. (Bullen, 2008, p. 39)

Here Bullen (2008) emphasizes that the outcome of the orchestral work as a whole may be more important than the details in a part. It might not even be noticed that the part was changed. However, changes in a part should only be made if it is not possible to play the part as written. As Phia Berghout puts it: 'By the way, strictly speaking, I always

tried to play exactly what the composer had written and it turned out that most of the time, however difficult it was, it was possible' (in den Hertog, 2008, p. 23). A different view is presented by Lawrence (1962) who claims that it is necessary to edit most orchestral parts except for the parts of Debussy, Ravel and Puccini. She also recommends that the harpist rearrange arranged harp parts to make them sound better.

Apart from the notation of pedal changes, harpists often use a pedal graph in orchestral parts to get a quick visual picture of the pedal settings in a piece. In orchestral parts these are often used in spots where the conductor is likely to start at a rehearsal, after a long break and at places the harpist practises the most. The pedal graph, or pictogram, was probably first presented in Salzedo and Lawrence's *Method for the harp* in 1929 (Marson, 2005; First published in 1927 according to Owens, 1993).

2.3 The orchestra

There are several aspects of orchestral playing to consider in this study. This section focuses on the musician and the instrument, the harpist's relationship to the conductor, working conditions, and how to learn orchestral playing.

2.3.1 The harpist and the harp

Baum recounts the difficulties she experienced with the music of contemporary composers:

> But when it came to Wagner, to Gustav Mahler, Richard Strauss, Debussy, we poor harp players needed all the arms of Shiva, a centipede's feet to be adequate to the demands of the composers that were my contemporaries. (Baum, 1962/1964, p. 143)

Difficult parts were a significant aspect of orchestral work for Baum. According to Rose (2007) the difficulties the harpist encounters when playing in an orchestra have little resemblance to those of any other instrument (see 2.1). Parts may not be idiomatic and need to be revised. The visual problems for harpists are different from other instrumentalists' visual problems. A harpist must look at the music, the conductor and other musicians while playing. In addition, a harpist must look at the instrument in order to place the fingers on the strings. Rose gives an example of difficulties encountered when playing in high registers of the harp, when the harpist has to turn the head to the side to look at the strings yet at the same time try to look at the conductor in front. Fingerings are always important to a harpist, and the preparation and the placement of the fingers is a vital part of preparing a piece of music. Neville Butler Challoner, who wrote a method in the beginning of the 19th century, stressed it was important to place the fingers before playing since it made the harpist able to

play without looking at the fingers (Marson, 2005). Marson (2005) notes that Challoner was an orchestral harpist and thus aware of problems a harpist could have with the visual triangle of fingers on harp, music on stand, and conductor. Chaloupka (1979/2002) points out that there are moments when it is not possible for harpists to look at the conductor.

> It is virtually impossible to play the harp without looking at the strings from time to time; thus there are times when the harpist cannot watch the conductor. Other instruments may be played purely by touch, but this is not feasible on the harp because there is neither reference point nor equal spacing of intervals. Octaves in the lower register require a larger span than those in the upper register. (Chaloupka, 1979/2002, p. 2)

Chaloupka notes here that it is not possible to feel on the string what pitch it is, and that the spacing between the strings is different in different registrers. Harpist Osian Ellis describes another difficulty that is a consequence of the spacing of the strings.

> …the margin of error on the harp is twice as much as the piano. There is maybe an inch between two fingers on a piano keyboard, between the two notes; but on a harp there is only half an inch between two strings. (Interview with Osian Ellis in Smyth, 1970, p. 177)

As Ellis points out, the margin of error when playing by feel is larger on harp than piano. Diverting visual attention to the strings makes other aspects of orchestral playing difficult. In addition, Rose (2007) notes that harpists must manage the technical challenge of changing pedals while playing. This pedal-work requires a special kind of concentration while playing in the orchestra.

The tuning of the harp may present problems as Blatter (1980/1989) points out when referring to the harp part in Sibelius' *1st Symphony*:

> …it is really a challenge for the harpist to tune the instrument and then sit and wait thirty minutes or more if he or she guessed accurately as to where the orchestra's intonation would be when it was finally the harp's turn to play. (Blatter, 1980/1989, p. 262)

Blatter observes that the tuning can change when waiting, and that the harpist is usually unable to do anything about it once the concert has started. Del Mar (1981) notes that long before the rest of the orchestra assembles for a rehearsal or concert the harpist has to tune the instrument. The harpist may need enough time to tune and to re-check the tuning before a performance, especially if the harp has been moved (Yeung, 2006). Bullen (1995/2009) suggests that the harpist should always arrive before the other musicians to be able to tune the harp since it is more difficult to tune in noisy surroundings. Fedson (2006) estimates that an experienced harpist needs about 10 minutes to tune the harp if the harp is well maintained and there have been no extreme

temperature changes. But she also stresses that factors in the concert hall can affect the tuning such as stage lights, air conditioning, heating systems, and other changes in humidity or temperature. Harps should be tuned as close to the rehearsal or concert as possible.

Another issue that Fedson (2006) finds important is the pitch chosen for an A. Orchestras may choose different tuning references and the harpist must know beforehand. Fedson (2006) suggests that the harpist begins tuning in A=440 or A=442 for the first rehearsal and adjusts for subsequent rehearsals. Some instruments are pre-tuned, for example, pitched percussion may be tuned to A=440 or A=442. If the harp is playing with pre-tuned percussion it must adapt to the percussion. In addition to tuning according to the overall tuning of the orchestra, the harpist has to tune according to the pieces played. In some cases, for example, the cadenza in G-flat in *Swan Lake* or other exposed passages the harpist usually tunes in the key of that passage as long as it doesn't affect the rest of the piece too much (Marson, 2005). Bullen (1995/2009) suggests that the tuning should be centred around the repertoire that will be played. She also claims that a well-regulated harp will make the tuning easier (see 2.1.3).

The harpist usually has to prepare the part before a rehearsal by writing fingerings and pedal markings; therefore sight-reading is quite difficult on harp. This is an issue that has been recognized for a long time. For example, Johannes Brahms, being aware of this problem as well as the need to practise the part beforehand, writes in a letter that '[t]he harpist has to have his score to look through before the performance' (in Marson, 2005, p. 130). The demands on the harpist's technical ability, experience and nerves can be related to the need to prepare parts, the difficulty of some parts and the technical difficulties of the instrument. Marie Goossens (1987) describes in her autobiography an occasion when the part was so frightening that the first harpist refused to play and they changed position:

> I only had to worry about the first ballet as I was asked to play second harp, but when my colleague saw this new music she took fright and resigned from the 'hot' seat, so I was asked to change my place to first harp. (Goossens, 1987, p. 47)

This situation does not seem to be unique since Goossens describes two similar situations where harpists refused to play.

> By this time I had been sent for again to go to the Queen's Hall where they were doing Holst's "Planets" and their second harpist had run away with fright, leaving Sir Henry Wood without a second player. I had to sight read once again. This time not so easy – "Mercury" is the quick movement it was here the poor girl took fright – I did not wonder – but again I was determined and managed somehow to "put up a show". It seems unbelievable, but soon after this another harpist fled and I was engaged overnight to play Wagner's "Song of the Rhinemaidens" which was played behind a curtain at the side of the stage. Fortunately Hyam Greenbaum was in charge so he rushed the part home to me. (Goossens, 1987, p. 49)

Problems with difficult parts may not be unique to harpists, but adding instrument-specific problems such as the need to prepare the part beforehand and the difficulty of sight-reading might increase the problem. These problems are intrinsic to the orchestral harpist's working environment.

Composers sometimes request that a harp part is executed by several harps. Berlioz suggests that harp parts be executed on at least two harps in the orchestra. He states that '[t]he effect of harps increases in proportion to the number employed' (Berlioz & Strauss, 1843/1991 p. 141). Rimsky-Korsakov (1913/1964) also recommends three to four harps playing in unison in order to be heard in an orchestral tutti. In the 19th century and the beginning of the 20th century composers often wanted several harps playing the parts. It is possible that composers' desires were not always realized in performance. In a letter from Felix Mendelssohn (1831/1971) to his mother in 1831 he writes about the excesses of the orchestra in *Symphonie Fantastique*, among them, two harps. The parts in that performance were performed with one harp to a part regardless of the intentions of Berlioz to create a harp section with several harps playing each part. Strauss (Berlioz & Strauss, 1843/1991) writes in his 1904 revised version of Berlioz' treatise that he agrees with Berlioz that a group of harps is more effective in a modern orchestra than a single harp, and that in Bayreuth the harp part of Wagner's *Tristan and Isolde* is executed on four harps. On the other hand Ebenezer Prout, in his 1899 book about the orchestra, claims that 'the doubling of a harp part in unison by two or more instruments is less effective than when a separate part is written for each' (in Marson, 2005, p. 107). Del Mar (1983) describes the position of the second harp, that it sometimes can be used to double the first part, and he stresses that it cannot always be regarded as optional when required by the composer. Marie Goossens (1987) mentions in her autobiography that they were still performing Wagner's operas with six and seven harps, this probably refers to the 1960s compared to the 1980s, something she seems to find important to tell. In discussing the number of harps required in an orchestra, one must consider that the volume produced by the 20th century harp is greater than that of a 19th century harp, although this can be said about most instruments in a modern orchestra. But the strategy of dividing difficult or impossible parts between first and second harp (see 2.2.3) is not possible if the part is not doubled or if there is no second harpist and second harp, available. It creates another working environment problem for the harpist to play a part alone in a full orchestra when the part was intended to be doubled. In some cases the harpist may even be required to combine several separate parts into one part (Rimsky-Korsakov, 1913/1964). Forsyth (1914/1982) claims that this may occur due to the expense of hiring extra musicians.

2.3.2 The harpist and the conductor

The visual problems referred to above (see 2.3.1) are technical problems connected with the instrument and create problems with looking at and interacting with, the conductor (Chaloupka, 1979/2002; Marson, 2005). Bullen (1995/2009) recommends keeping

the view of the conductor in mind when choosing fingerings. There are problems related to seeing the strings and looking at the conductor at the same time (Chaloupka, 1979/2002; Marson, 2005). Another factor that may cause visual problems is the location of the harp in the orchestra. The harp is usually placed at the back, behind the violins, at the conductor's left side (Knight, 2006). The harpist might then not be able to see the right hand of the conductor. There is also a possibility that from some angles the conductor is obscured behind other musicians. Locating the harp at the back of the orchestra is often due to the fact that the harp might otherwise block the view for other instrumentalists (Rollo & Bowles, 2006). This placement may prevent the harpist from hearing cues from the orchestra, or seeing the conductor properly.

Rose (2007) finds that most conductors are not aware of the projection of the sound of the harp. She stresses that it sounds louder close to the harp than at a distance, and this may lead the conductor to think that the sound projects as well into the concert hall as it does to the podium. The harp also has different sound radiation in different registers. Waltham (2010) refers to a study by Bell and Firth who measured the sound radiation from a Salvi Orchestra harp. They found that 'below 400 Hz the harp is omnidirectional; between 400 and 2,000 Hz it radiates predominantly in the forward and backward directions; and above 2,000 Hz it radiates in three directions – backward, forward-left, and forward-right' (pp. 164-165). This study analysed one specific model of harp from one builder, and it is possible that other models and harps by other harp builders would show different results. However, it is likely that the sound radiates in different directions from different registers on other harps.

Osian Ellis (Smyth, 1970) asserts that conductors have the power to make musicians' working situations difficult or easy (see 2.3.3). Sidonie Goossens recalls when playing Britten's *Young Person's guide to the orchestra* with Stokowski:

> There are two different harp versions according to whether the work is being performed with or without a narrator. He insisted I was playing the wrong one so I said if that was the way he wanted it I would play it that way although I knew he was wrong. It sounded terrible in the performance. (Sidonie Goossens talk given to the Delius Society, September 23, 1992. Rosen, 1993, p. 323)

Goossens here describes a situation in which she, as a musician, has no right to argue with the conductor on what part to perform, or in a less extreme situation how to perform the part, since the conductor has the responsibility for the overall performance of the orchestra. But as Baum (1962/1964) describes in her autobiography, not all conductors lead the musicians to frustration. They can also bring out the best in musicians. Here she recalls working with Bruno Walter:

> We all loved him because he made every one of us play better than we had known we could. Against the dreariness of the daily orchestral routine work these rehearsals, these first performances, were life-saving. I don't know how I could have carried my load through those years without the counterbalance of music, the new, exciting music of our own time. (Baum, 1962/1964, p. 144)

Liljeholm Johansson (2010) underlines the importance of having good conductors and well-planned rehearsals for the individual musician's well being. She claims that a conductor's inhumane behaviour and poor social competence is accepted as long as the conductor is good. Musicians are very vulnerable to the behaviour of conductors, including when a conductor is mean-spirited or treats them badly. To a certain extent conductors control what pieces are rehearsed at a rehearsal and when they are rehearsed. Alice Chalifoux (Pike, 2003) describes an earlier practice when conductors did not make rehearsal schedules. Musicians had to be ready to play at any time, and some such as percussionists and harpists had to sit in rehearsals without playing a single note for a week, since the conductor might change the program at short notice.

Rose (2007) raises the important issue of tempo. A slightly faster tempo might not affect other instrumentalists' playing drastically but for a harpist it might make the part impossible to play. Thus the choice of tempo made by the conductor may affect the playability of the part.

A musician always has a personal responsibility towards the conductor. Rosa Spier's attempt to try to calm an inexperienced and nervous colleague at their first rehearsal with a feared conductor provides an illustration. But simplifying the part did not turn out well, as Phia Berghout recalls:

> I remember that moment very well. When we came to the 'unplayable' passage Rosa reassured me and said that we would not play all the notes separately but just do a glissando, it was often done like this. I was relieved and followed her advice. Of course Mengelberg stopped and said: "Second harp, can you play that passage alone?" I did the best I could. Then: "Do you know that you are playing the wrong notes?" At that moment I heard my colleagues hissing around me: "Smile, just smile at him", so I did, and went on playing. "Will you please study this passage", was the only comment Mengelberg made afterwards. And I did, I studied it like mad! Even now, if you woke me up in the middle of the night I would play all the notes, faultlessly. (Interview with Phia Berghout, in den Hertog, 2008, p. 21)

This passage shows the fear of being found 'cheating' by the conductor, but it also points to other problems. As Sidonie Goossens describes in an interview (Rosen, 1993), at the first rehearsal the harpist learns what to focus on when practising the part since it has to be learnt in the context (see 2.1.1). She describes that as faking on the first rehearsal. As shown in the quotation above, an acceptable musical solution in one context might not work in another. In Berghout's situation the first harpist plays the same version of the passage in Mahler's *4th Symphony* with glissando. Mahler's *4th*

Symphony only has one harp part (Mahler, 1906/2000). But only the inexperienced and nervous second harpist was exposed to play the passage alone, not the first harpist who, in principle, is responsible for what version the second harpist plays and who plays the passage in unison.

In conclusion, harpists often feel that conductors have no knowledge about the specific problems harpists face in an orchestra. Harpists' problems are related to the complexity of the instrument, visual problems when playing in an orchestra, unidiomatic parts, and the need to prepare the parts in advance. Historical perspectives on the roles of conductor and musicians may be undergoing changes due to different views of orchestral structures. Fischer and Jackson (1997) propose that a reconstruction and a remythologization of the orchestra and the conductor's role should be made. They argue that the view of the conductor as an autocratic and charismatic leader of the orchestra should be seen in light of history and ritual. The myths are that the conductor is the true performer and the musicians his tools to perform music; the rituals of the orchestra and the organisation perpetuate these myths. The re-enactment of these myths establishes a situation in which the professional knowledge and responsibility of the musician is diminished. Fisher and Jackson (1997) claim that orchestral playing is an on-going negotiation between musicians, and between conductor and musicians. The orchestra therefore has to be remythologizised. Fisher and Jackson's solution is a mutual responsiveness myth as a starting point. Dobson and Gaunt's (2013) results of their study of orchestral musicians show that communication and negotiation within the orchestra is more complex than the hierarchical model suggests.

2.3.3 Working conditions

A difficulty connected with work in the orchestra is that of constantly maintaining a high level of musicianship. Nerves can be a problem when it is not possible to prepare oneself adequately due to short lead times or when sight-reading. Nerves may also be an inherent problem connected with the profession.

> AS: Is it nerve-racking?
>
> OE: Yes, it is. Another strange thing is that sometimes I can come back to this orchestra and be petrified about playing some little pieces and yet when I was sitting in front of an audience by myself doing a whole concerto or a whole recital I won't have had these nervous feelings.
>
> AS: How do you cope with it?
>
> OE: I think maybe one is not so strong physically as one should be occasionally. The only way to really cope is when you are on top of the world; if you are below your one hundred per cent, then you have difficulty. Sometimes it depends on the conductor; he can make it difficult or easy for you. You enjoy playing something sometimes and on

> another day you might be quite nervous with the same tune. This is quite curious: something I have never been quite able to assess the cause. But this is something a musician, or an actor, must live with. (Interview with Osian Ellis, in Smyth, 1970, p. 182)

Here, Ellis describes how the musician's situation in the orchestra can cause more nervousness than playing solo. He also observes that it is difficult to understand why a piece can cause nervousness on one occasion and not on another. Nervousness may be triggered by the conductor or a difficult part, but also by the orchestral situation itself and the physical and mental state of the musician. Bullen (1995/2009) regards the ability to look confident, calm and in command when playing, for example, by not looking nervous when feeling it, or by not being seen counting bars, as orchestral skills. Thus the appearance of the musician may affect the working situation. For the harpist, a difficult and exposed place such as a cadenza might occur after a long period of tacet, making it extra challenging (Rose, 2007). For example, Bullen (1995/2009) notes that for the challenging parts in *Symphonie Fantastique* the harpists must wait 15 minutes before their entrance.

Parasuraman and Purohit (2000) examined factors that cause stress among orchestral musicians and noted two reasons in particular: too much workload and too little workload, or boredom. Both types of stress can be caused by perceived lack of artistic integrity; that is, to have a limited influence over how to play. The authors also describe other stress factors such as task difficulty and social factors. They refer to other studies in which additional aspects are highlighted such as the anonymity of the orchestral musician, performance anxiety and working environment problems. Musicians are trained for a different profession than they encounter in the orchestra: their education prioritizes creative soloists, but working in the orchestra requires submission to the collective in musical matters and cooperation. Gillinson and Vaughan (2003) claim that peer pressure is one of the major stress factors for orchestral musicians. Liljeholm Johansson (2010) describes work environment issues for orchestras in Sweden. She points in particular to the individual musician's responsibility for his or her own work. There is collegial social pressure on the individual to get a good result on both collective and individual levels. Unclear work responsibilities towards colleagues in the orchestra are perceived as a problem, such as which powers and responsibilities the section leaders have. Liljeholm Johansson (2010) notes that the individual musician is, to a large extent, responsible for his or her working environment and health. Work-related problems are common but are treated as individual responsibilities and not as work environment problems. The individual musician has a responsibility to continually perform at a high level, which means that strain injuries may be ignored for a long time and can develop into serious injuries. Since orchestral musicians are task-oriented and have high standards for a good performance they often accept unpleasant and inhumane behaviour from colleagues and the conductor, which affects the work environment. There is usually little opportunity for the individual musician to influence his or her work situation which means that many musicians lose interest in

their work. Conflicts between management and musicians are common. Some orchestra managements passively exploit the peer pressure between musicians, for example, by using bullying and informing systems by peers within the orchestras in order to make musicians who do not meet the standards quit or to raise their standard of performance. The orchestra's management also leaves it to the individual musician to take responsibility for his or her standard of performance and development, which is usually done outside the work-place and working hours. The orchestra management is responsible for planning repertoire that allows the musicians in the orchestra time to recover in between productions. Liljeholm Johansson (2010) points out other important aspects: that the repertoire should be varied, since too demanding or too boring repertoire for a long time affects the work situation, and that good conductors are important. She observes that while orchestral musicians have a demanding job, they have little ability to influence the psychosocial work environment, and that many problems that arise are solvable within the organization.

Gillinson and Vaughan (2003) describe other working condition issues, such as differences in workloads in different orchestras. Some orchestras may provide opportunities for musicians to take additional work playing chamber music and teaching, while other orchestras will not provide these opportunities. There are also different approaches to how the musicians are paid, as equal payment to all members in the orchestra, equal payment according to position, or individually negotiated payment. There are also differences in how much time orchestras spend on tour, and how many recordings they do.

Knight (2006) studies the orchestra from a geographical perspective, which he divides into four levels. At the *macro scale,* he describes orchestras in the world and through a historical perspective. At the *meso scale,* the spaces where orchestras play, such as concert halls and other venues, are described. The *mini scale* refers to how the musicians, the conductor, the audience and the musical work are related to each other. Knight observes that there are different seating arrangements in different orchestras even if most of them are similar. There are also different seating practices when sections are elevated on stage. Due to the repertoire played, different seating is required. The harp is usually not kept on stage when it is not used, but Knight notes that it is usually kept close to the stage because the tuning may be affected by moving it. The last level is the *micro scale* which describes the individual musician's physical and mental space in the orchestra. The musicians have to be aware of their own space and the relationships within the orchestra. A musician's space is both musical and physical, including consideration of the physical instrument and other items required on stage. Knight describes that there is a hierarchy in orchestras: principals, sub-principals and rank-and-file musicians. The principal musicians are soloists and also section leaders. Usually the harp section consists of one or two harpists. Bullen (2008) describes the difference between first harp and second harp and claims that the second is often more difficult to play. The second harp must adapt to the first harp regarding entrances, volume and mufflings. But the second harp also often has entrances where it is independent and has to take the

initiative. Both harpists should have knowledge of both parts, since the result is their combined responsibility.

Knight (2006) claims that different spatial positions and different instrumental positions in the orchestra have different *listening lines* and *sight lines*. The listening lines vary depending on the score. But also the position in the section is important for the listening lines. The sight lines are more dependent on instrumental positions. All musicians have to see the conductor, but it is also necessary to see section leaders and their signs. Sight lines are also dependent on what players of different instruments require. In a performance different timings are required of musicians depending on where they are located. Different orchestras also have different responses to the conductor's beat; how long after the beat the orchestra plays. Knight observes that musicians in orchestras do not only rely on the conductor but also on each other, and stresses that the idea that the conductor is in charge is not always true. Orchestras may lead the conductor, or ignore the conductor.

2.3.4 Learning to play in an orchestra as a harpist

For harpists, gaining experience can be difficult (Wooster, 2006). One reason is that most harp students begin playing the lever harp, an instrument quite different from the pedal harp in range and chromatic capability. Most parts for orchestra are written for pedal harp. Since the lever harp has a different system for accidentals and fewer strings, most pedal harp parts are unplayable or extremely difficult on the lever harp (Wooster, 2006). But even if the student plays a pedal harp many parts can be too difficult for a student. Lucas and Barber (2006) claim that 'many harp parts are challenging for even professional harpists' (p. 37) and thus unsuitable for a student. Orchestral pieces that are technically quite easy for other players in the orchestra can have difficult harp parts (Wooster, 2006). When a harp player begins playing in an orchestra they usually have less ensemble experience than the rest of the players. Thus, a student's ensemble skill level may be lower than their technical level, which makes orchestral playing difficult (Lucas & Barber, 2006). That would mean that even if a student can play an orchestral part technically he or she may not be able to play it in the orchestra. Lucas and Barber (2006) suggest several ways to adapt different kinds of parts to make it possible for the student to gain ensemble or orchestral experience. They suggest that other instruments' parts could be adapted for harp, new parts should be written and difficult parts simplified. The aim is that harpists develop ensemble skills as other instrumentalists at the same level do, even if they do not play proper harp parts. Lonnert (2011) shows that harp teachers have an awareness of how to teach harp students orchestral playing since orchestral playing for harpists has to be learnt in a relatively short time.

Rollo and Bowles (2006) stress the difficulty associated with transporting the instrument. Often a harpist is asked to participate only at the last two rehearsals before the concert which can prevent the harpist getting enough experience. Their suggestion,

if it is not possible to bring the harp to the rehearsal, is that the harpist sits at the rehearsal without playing. The practice of bringing in the harpist in late, and possibly not rehearsing the parts that are important for the harpist at those rehearsals, may cause anguish to an inexperienced orchestral player. Lucas and Barber (2006) stress that it is important that the harpist get an initial positive experience. Rollo and Bowles (2006) advocate that the student, conductor and teacher must work together to promote the student's learning in the orchestra. For example, it is important to draw attention to the visual and aural difficulties that a harpist might have in an orchestra due to the seating and to ways to solve these problems. Conductors should be aware that harpists often have less experience than their peer musicians and that the harpist might have problems with the part, with the instrument and in the orchestra. Teachers should prepare the student for instrument-specific issues in the orchestra, and for general orchestral playing, such as teaching conducting patterns and techniques for counting rests. The aims are that the harpist gets experience and that the experiences are positive, since, as Rollo and Bowles (2006) state, it might influence their entire musical lives.

Bullen (1995/2009) describes how to prepare for auditions. She recommends making practice tapes of audition excerpts and playing along with them. Listening to different interpretations, preferably including one with the conductor who the audition will be for, is another strategy. She stresses the importance of knowing the score and claims that it is very obvious when a musician does not know the score at an audition. Bullen also describes other issues that may be important at an audition, for example, how to dress and how to behave. The first round in auditions is usually a soloistic task, in which the musician should show the uniqueness of his or her musicianship as well as an outstanding musical level. When playing the round with excerpts, not only should harpists show that they can play the harp well but they should also demonstrate awareness of the context of the excerpt. For Bullen (1995/2009) knowledge of how to prepare a part, how to tune, and knowledge about orchestral etiquette are orchestral skills.

Channing (2003) claims that orchestral musicians' training changed during the end of the 20th century. He compares his own conservatoire orchestral training which mostly consisted of lessons with his instrumental teacher and participation in three orchestral projects, with the more extensive conservatoire orchestral training today. Orchestral training is included in most educational programmes today and it is also common in postgraduate orchestral courses. Co-operation between orchestral institutions and conservatoires, and high-level youth orchestras offer further training possibilities.

2.4 Summary

In this chapter three main areas have been covered: the harp, the orchestral part, and the orchestra. The harp is the only instrument in the orchestra requiring complex technical pedalling to obtain accidentals. The harp also has particular tuning issues. The harp used today in symphony orchestras differs from harps used in previous eras. Therefore some parts were written for instruments that are very different from the double action harp. The orchestral part is the main tool enabling a player to perform a specific piece in an orchestra. A part cannot be regarded as complete information but must be interpreted by the musicians, for example, regarding the style of the composer, or interpretation by the conductor. To interpret the part, it must be considered in relation to its context, such as who the composer was and what information the composer had when writing the work. An orchestral harpist sometimes has to edit parts that are unplayable in addition to doing normal preparation of parts before rehearsals. When playing in the orchestra, harp-specific problems may arise due to the need to prepare parts before rehearsals, visual problems or technical problems. The conductor is central to the orchestral performance, and especially to the quality of the performance and the work environment. Other work environment issues are stress factors, seating and position. Harp students might have difficulties learning orchestral playing due to difficulty getting enough experience.

Chapter 3.
On knowledge and learning: a theoretical framework

The experiences of human beings and their life-worlds can be expressed by means of aesthetic expressions as well as through philosophical ideas and verbal expressions. A source of inspiration for this study has been Liedman's (1997, 2001/2008; 2006) views on knowledge, learning, science, the human being, and the thoughts of the human being. The main philosophical works I have been inspired by are Wittgenstein's *On certainty* (1969/1979) and *Philosophical investigations* (1953/2009) and Aristotle's *Nicomachean ethics* (1995b). From time to time I have used contemporary interpretations of these texts in addition to the original texts.

In this thesis, I often draw on Nussbaum's (1990, 1993) interpretations of Aristotle. She is one of our foremost interpreters of Aristotle and an influential philosopher herself. She has chosen to interpret Aristotle by returning to the original texts rather than referring to interpretations by others. She presents his ideas and texts as relevant for our present time. Aristotle often illustrates his thoughts on ethics with examples from practical activity; current research on professions reverses the perspective and uses Aristotle's ideas on ethical issues to discuss practical knowledge.

Wittgenstein often presents his ideas as short aphorisms, sometimes implying poetry. This 'artistic' way of presenting arguments gives his writing a special place in my studies, since he touches on issues that are relevant for musicians. His philosophy addresses many topics; some of these he treats thoroughly and others briefly, and many different philosophical branches emerge from them. One branch is the philosophy of practice that Johannessen (1999, 1999/2002) developed, which forms a base for a Nordic branch of research on practical knowledge such as research on professions within the aesthetic area. Another branch addresses ideas about language and actions connected to Wittgenstein's late philosophy developed by Ryle (1949/2002) and Austin (1979), philosophers from Oxford. The model of learning developed by Dreyfus and Dreyfus (1988, 2000), and the importance of the context also has roots in Wittgenstein's philosophy (Janik, 1996; Johannessen, 1999).

This chapter addresses several issues: the possibility of regarding practical knowledge as knowledge and, therefore, the possibility of regarding musicians' knowledge as

knowledge. In the chapter it is suggested that it is possible to treat practical knowledge as an object for research. Finally the chapter connects practical knowledge to my area of research: musicians' knowledge and learning. The focus is on combining epistemological ideas with practical application of knowledge such as that which occurs in music making.

3.1 On musicians' knowledge

The ability to play music has often been seen as talent-based and not as knowledge built on education with its complex pattern of study and hard work (Liedman, 2001/2008). To regard the ability to play music only as talent may lead to the consequence that it is not seen as knowledge but as the individual's natural disposition. Whereas to regard it as knowledge is compatible with a view of musicians' knowledge as knowledge that is possible to study and learn. To be a musician has often been seen as a practical craft, probably due to the character of the education process and the practical character of performing. The epistemological view of practical knowledge and of research about practical knowledge therefore illuminates different aspects of the work of musicians. In this section different aspects of practical knowledge are presented, both in a historical and in a contemporary perspective.

3.1.1 Disputes about knowledge

Questions about the nature of knowledge and the implications of having knowledge about something have been central for philosophers and scientists in the Western history of ideas. In contemporary discussions about research and practical knowledge four aspects are prominent. One aspect is the view that knowledge can only be verbal, such as a spoken or written scientific truth. Another aspect is the distinction between knowledge and art. A third aspect is the division of the human being into body and soul. A fourth is the position that scientific knowledge always can and should be replicated and proven. These aspects provoke questions such as: What is knowledge? How can we transmit knowledge? and Where in the individual human being is knowledge situated?

One of the strongest traditions of discussing knowledge in Western philosophy is demonstrated in Plato's (1987) dialogue *Theaetetus*. In this dialogue between Socrates and Theaetetus, Plato tries to find possible definitions of the nature of knowledge. He finds three: knowledge is *perception* (Theaetetus, 152c), knowledge is *true belief* (Theaetetus, 187b), and knowledge is *correct belief accompanied by a rational account* (Theaetetus, 208c). Each of these definitions is rejected for different reasons, and Socrates ends up being unable to define the concept of knowledge. In the introductory

part, where Theaetetus offers his first spontaneous answer about the definition of knowledge, he gives examples of what he considers to be knowledge. Among these are astronomy, harmony and arithmetic, but also practical knowledge such as a shoemaker's knowledge of his craft. Socrates' response is that defining areas of knowledge does not define the knowledge in itself, nor is it defined by defining what the knowledge is about. On the other hand, Socrates describes practical knowledge, and his own philosophical dialogical method, as an art and not as knowledge. In the analogy of the midwife he also emphasizes experience, here the experience of giving birth, as essential and a basis for knowledge as an art. Art is knowledge about something, and not knowledge in itself.

Aristotle (1995b) presents a different view of knowledge in *Nicomachean ethics*. In this volume he focuses mainly on ethical questions but also considers other issues. One of his main points is the difference between action as a goal in itself and action that leads to the goal or product. He also sheds light on the activity and the action within the knowledge and distinguishes between having knowledge about something and using knowledge to perform something. He argues that the knowledge is shown in the activity when executing an action. Furthermore he divides the human being's search to reach truth, and to perform an action, into five parts: *episteme* – knowledge, *techné* – productive craftsmanship, *phronesis* – practical wisdom, *nous* – insight, and *sofia* – philosophical wisdom. Episteme is the unchanging knowledge that can be learnt. Techné is connected with production. Phronesis is an ability to act righteously; it is an ability or disposition particular to an individual human being and it is practical and applied to a unique case. Nous is the mind's disposition and ability to judge through reason. Sofia is perfection to Aristotle who claims that 'any one would say that what is wise is the same but what is practically wise is different' (Arist. *EN* VI.7, 1141a23-24, transl. Ross. Aristotle, 1995b, p. 1801). Thus there is a difference between sofia and phronesis.

Johannessen (1999) interprets episteme as belonging to the unchangeable knowledge, techné as knowledge that can be learnt and forgotten, and phronesis as knowledge of a kind that can neither be studied nor forgotten. Thus techné is practical knowledge that has to be maintained by doing, while phronesis is a deeper wisdom that is incorporated in the individual human being. For example, in music one has to continuously practise playing an instrument to keep a high technical level. But it is also possible to possess knowledge about music without playing an instrument. It is not necessary to play an instrument to be able to make a judgement on music or to have an opinion about music. Aristotle (1995b) also makes a distinction between *poiesis* – when a goal is beyond the action in itself, and *praxis* – where the action in itself is the goal. A goal for poiesis is, for example, to build a house whereas the goal for praxis is action in the ethical field. The knowledge about practical craftsmanship – techné, is the basis for poiesis and knowledge about practical wisdom – phronesis, is the basis for praxis. These concepts are often used differently today. For example, Liedman (2001/2008) indicates that Aristotle's techné is divided today into the concepts of arts and craftsmanship or

technique. Praxis often has a wider meaning today referring to actions of an individual and actions of groups of people, and the goal-oriented distinction between poiesis and praxis is not used.

Current Nordic research on practical knowledge often is built on Aristotle's ideas (Gustavsson, 2000; Liedman, 2001/2008). Practical knowledge has only been addressed peripherally, mainly in essays and fiction rather than theories of science, since Aristotle's time until a resurgence of interest in the 20th century (Gustavsson, 2000; Janik, 1996). In particular, practical knowledge in the form of techné has not been discussed. During and after classical antiquity, ethics was the main topic in practical knowledge but from the 20th century the discussion has widened to contain other forms of practical knowledge, for example, knowledge about professional practice. Concepts of knowledge such as phronesis and techné formerly used in ethical discussions are now used to discuss crafts and aesthetic issues. Aristotle mainly addresses phronesis to areas belonging to ethical discussions, however now phronesis is used for crafts and aesthetic issues, formerly considered as only belonging to techné. Aristotle himself often illustrates his ethical discussions with examples from practical professions such as musician or architect. He also often transfers concepts and words from practical professions for use in philosophical issues (Liedman, 2006).

Ryle (1949/2002) questions the division of the human being into body and mind. He also questions prioritizing theoretical knowledge over a more integrated knowledge consisting of theoretical and practical knowledge. He argues that no action starts by thinking theoretically to be followed by action, but that these are intertwined. The concepts he uses to describe different kinds of knowledge are *knowing that* – to have theoretical knowledge about something, and *knowing how* – to have practical knowledge about doing something. Ryle (1949/2002) also describes practical knowledge being performed out of habit, and practical knowledge being performed with reflection and toward constant improvement – *intelligent capacities*. He claims that habits are based on drill, and intelligent capacities are based on training. He also describes learning in a context where knowledge is shown in action rather than through theoretical knowledge of rules. Learning, according to Ryle, occurs through performing or through the practice of theoretical knowledge. In practice these two ways of learning cannot be distinguished from each other since it is the result that is important. When gaining knowledge the knowledge is internalized and becomes so natural for the performer that it does not have to be verbalized anymore.

The division into knowing how and knowing what that Ryle (1949/2002) presents leads to a question about the nature of practical knowledge. He argues that practical and theoretical knowledge are intertwined but his division of knowledge has had a great impact on research about practical knowledge due to the labelling of practical knowledge as a kind of knowledge in the same way as theoretical knowledge can be labelled as knowledge. From these concepts a discussion arises about knowledge and the practical dimension in all kinds of knowledge, but especially in professions such as artistic professions and crafts. Liedman (1997) regards Ryle's concepts in the light of

the division between arts and sciences in the tradition of British education. Arts refer to subjects that are associated with action, and science to subjects that are associated with knowledge and insight. F. V. Nielsen (1998) claims that music has an ars-aspect and a scientia-aspect, where the ars-aspect always is the primary aspect. The ars-aspect is most apparent when practising music through playing, singing and composing. The scientia-aspect can be seen as more verbal, but also in the craftsmanship and technical aspects of performing music.

The professions that are regarded as practical can often be defined through how knowledge is practiced and how knowledge is transmitted. A central point for Janik (1996) is that practical knowledge is acquired through experience and that it is transferred, for example, through apprenticeship as among craftsmen. Knowledge transfer often takes place between two individuals, and is learnt through activity or application of knowledge. The acquisition of knowledge occurs in action and the knowledge is situated in the action performed. Janik (1996) believes that the knowledge of craftsmen, artistic professions and aesthetic professions, and also other kinds of knowledge in other professions, contains aspects that cannot be regarded as scientific truths. This knowledge cannot be expressed in written words or verbalized without leaving out some dimensions. His central point is that practical knowledge is an activity and that it is performed.

Feyerabend (1988) claims that all knowledge has a practical dimension and that everyday life would be impossible without the tacit, practical knowledge in which constant interpretation of behaviour of others and of surrounding phenomena takes place. He argues that all human societies and all human knowledge are based on practical tacit knowledge. Similarly Liedman's (2001/2008) view is that all knowledge has a practical dimension and he claims that there are difficulties in dividing knowledge into practical knowledge and theoretical knowledge. Knowledge is what the human being has internalized and theoretical knowledge is only *one* possibility of what is possible to acquire. Liedman's view of knowledge opens up an understanding of knowledge that includes all kinds of action and knowledge.

A contribution to these views of knowledge acquisition is made by Dreier (2000) who rejects the idea of knowledge as a constant accumulation of information that can be used in an activity. He claims that nobody knows which knowledge will come into use since the learning and the use of acquired knowledge is in a constant state of change. The questions of what is used and how it is used are contextual and personal, and it is not always possible to predict which knowledge and when, how and in what context it will come into use.

The most important points in contemporary research about practical knowledge are that it is knowledge that is applied and that this knowledge is to be found in action. The separation between body and mind or theoretical and practical knowledge is not relevant since it is not possible to separate these concepts. Although this is not possible, these concepts are useful for clarification and discussion of knowledge and different

aspects of knowledge in contrast with a traditional view of knowledge as verbalized scientific truth. Janik (2005/2006) suggests using the concept *practical epistemology* when working with knowledge within practical professions.

3.1.2 Body and knowledge

Many discussions of the nature of knowledge go back to the philosophy of Descartes such as Ryle's polemic above. In *Discourse on the method of rightly conducting the reason and seeking for truth in the sciences* (1637/1996) Descartes states 'I think, therefore I am' (p. 21), in which, through reflection and his own experience, he finds a basis for his knowledge. Consequently he claims that the soul, whose essence is to think and to reach knowledge, is separated from the body. Exterior sensations from the surrounding world reach the soul through the body and a link between body and soul is established. Exterior stimuli give ideas to the mind, as do physical experiences such as hunger or thirst. He describes the senses – that receive the ideas, the memory – that retains the ideas, and the imagination – that changes the ideas and processes them into something new. In a reflection about the man and the machine Descartes writes:

> …it is not sufficient that it [the rational soul] should be lodged in the human body like a pilot in his ship, unless perhaps for the moving of its members, but that it is necessary that it should also be joined and united more closely to the body in order to have sensations and appetites similar to our own, and thus to form a true man. (Descartes, 1637/1996, p. 36)

Descartes makes a conscious and clear division between body and soul, but has a more differentiated view of man than what is commonly known as a Cartesian view of the world. In epistemology, emphasis is often on the dualistic separation. In Descartes' exchange of letters with Elisabeth of Bohemia (Descartes, 1643/1991a; Descartes 1643/1991b) he clarifies his view of the relationship of the body and the soul. The human being has a soul, which is the part that thinks, and a body, which is the part that acts or can be exposed to action. But there is also the unity of these parts and Descartes understands it is impossible to see the body and soul as separated, as he writes in his *Discourse*, and to see the body and soul as a unity at the same time. The latter, he writes, is what everybody experiences in daily life. This unity of body and soul is expressed in a letter: 'Everyone feels that he is a single person with both body and thought so related by nature that the thought can move the body and feel the things which happen to it' (Descartes, 1643/1991b, p. 228). However, his focus in most of his philosophical writings is on reaching absolute knowledge, which according to him can be found in the soul, and in most writings he does not deal with the other possibilities. The idea that the body and soul are separated was common in philosophy, and in religion, before Descartes as well as after (Liedman, 2006).

Rejecting the idea of a dualistic separation of body and soul, and upgrading practical knowledge as equal to theoretical knowledge is thus central. However, by focusing on theoretical knowledge and practical knowledge the differences are highlighted even if the intention is the opposite. Since practical knowledge is not seen as pure scientific knowledge or as knowledge that can be written down in propositions, a view of knowledge as situated in the body develops which can enhance Cartesian dualism. Most researchers on practical knowledge emphasize the unit human-in-action, and do not separate scientific knowledge from bodily knowledge or practical knowledge. Central to the description of practical knowledge is that it is incorporated in the human-when-acting and that a dichotomy between body and soul does not exist. Bowman and Powell (2007) argue that 'the point is, rather, that music is distinctively, perhaps uniquely, a form of embodied agency; the unity of the body-mind is a fact that musical experience demonstrates vividly, compellingly, irrefutably' (p. 1101). They suggest that all musical experience is embodied, and that this fact has to be taken into account not only when dealing with the performance of music but also with listening to music.

Janik (1996) claims that practical knowledge gets situated in the body and makes actions become 'second nature'. Practical knowledge is a basis for all our knowledge and learning, and it gets so ubiquitous that it becomes invisible. Another aspect Janik emphasizes is that knowledge is connected to our identity. That is why one becomes insecure when one parameter changes in an ordinary act but in a different milieu. Aristotle also claims that habits eventually become integrated into the individual human being: 'I say that habit's but long practice, friend, And this becomes men's nature in the end' (Arist. *EN* VII.10, 1152a32-33, transl. Ross. Evenus, in Aristotle, 1995b, p. 1820).

One philosophical orientation that has influenced views of practical knowledge is phenomenology.[2] Within this orientation Merleau-Ponty (1945/1997) contributes two aspects; one is his view of the body and the other is his view of perception. Merleau-Ponty emphasizes that the body is the tool through which we experience the world, and that the body exists in a context in which we can experience and understand the world. The body and soul cannot be seen as separate objects but are interconnected, and the human consists of the lived body. Merleau-Ponty (1945/1997) sees this connection as a link to the expanded body where a tool becomes an extension of the body. The use of tools and the internalization of a habit to use the tool, when the tool no longer has to be consciously focused on, is not seen as objective knowledge or automatized knowledge but as an extension of the body – an internalization of the tool into the body. Examples of objects that can be internalized as tools are musical instruments, a blind persons' cane, or a bike. The habit consists of the bodily understanding and incorporation of movement in everyday situations, for example, in the learning of dancing. Following on from the lived body as a subject is the perception of the

[2] Another important orientation is pragmatism (Gustavsson, 2000).

surrounding world (Bengtsson, 2001). The direct perception of the surrounding world is grounded in the experiences of the experiencing person – the subject. These experiences are constantly changing through new experiences of the subject. Experience can thus be trained or made conscious even if direct perception cannot be chosen consciously.

Plato and Aristotle, and the traditions following them, represent two different views of body and mind. Plato emphasizes the intellect, separated from the body, and Aristotle emphasizes the human as a unity and experiencing everyday phenomena with empirical methods (Liedman, 1997; Nussbaum, 1993). Understandings of body and knowledge can be built on Schön's (1983/1991) and Ryle's (1949/2002) ideas of integrated action and reflection and also on Merleau-Ponty's (1945/1997) phenomenological view of man.

3.1.3 Reflection

Locke (1690/1992) claims that all ideas come from sensations of the senses or reflection of the mind, which Locke also relates to experience. Sensation is the intermediation of impressions from the world through the senses to the mind. Reflection is the mind's inner activity as it reconnects to its own activity. The sources of our ideas, according to Locke, are exterior influence through perception of the world as an object for sensation, and the perception of inner activity as an object for reflection. Reflection is an activity that can create ideas and arouse emotions. The mind can reflect upon the ideas it receives through sensation of the senses; that is what Locke calls *ideas of reflection*. What Locke describes as the core of reflection is an inner activity that is related to sensations. But he also claims that reflection in itself can create reflection. Reflection is at the heart of epistemology after Descartes. Descartes' basis for knowledge was reflection. Knowledge obtained through reflection is particular to the person who is reflecting and is therefore personal.

Schön (1983/1991) considers reflection to be a basis for practical knowledge. Reflection and action are connected and reflection occurs in action. This assumes a view of knowledge in which the body and mind are not separated and in which practical knowledge is considered to be knowledge. Reflection, to Schön (1983/1991) is not only the activity of the mind or the intellect – something that can be connected to the use of language – but the activity of a unity of body and mind which reflect in the action and upon the action. Reflection is not necessarily verbal or verbalized. Ryle's (1949/2002) distinction between practical knowledge as habit and the intelligent capacities, where reflection and continuous improvement take place, clarifies the ideas of Schön. Janik (1996) claims that a form of reflection is embedded in the action within practical knowledge. Practical philosophy, according to Janik, is to systematically study experience from an epistemological view. He aims to relate practical knowledge to ethics, an area that traditionally has been regarded as belonging to practical philosophy.

Janik (1996) argues that practical knowledge in its nature is not reflected upon and that reflection only occurs in situations when the routine does not work, whereas Schön considers practical knowledge as intelligent capacities: knowledge that is reflected upon and constantly developed. Janik (1996) appears to regard practical knowledge foremost as internalized tacit knowledge or a habit that is used until a change is needed and, thus, reflection or intelligent capacities are needed. Åberg (2008) claims that in musical learning something that has become a habit must be reconsidered when learning something new. Habits must occasionally be un-learnt so that knowledge can be expanded and new things learnt. Un-learning as well as learning can be a conscious process and is built on reflection.

Fjelkestam (2009b) builds on Schön (1983/1991) and B. Molander (1993) describing reflection as a process of conceptualization and contextualization. She claims that the first step in this process is to identify the problem in order to use personal knowledge to pursue a solution. Reflection is a continuous inner dialogue where different aspects of time are involved. The present time is reflected by the past, with its experiences, but also to the possible future.

Augustine (n.d.) problematizes the trisection of the time concept. He believes that while we can easily use the term and concept of time, and people often reach consensus about its usage, it is still impossible to explain. Augustine divides time into three different parts in his problematization of past, present and future. Central to his thought is that in the present, time changes from the future to the past. When discussing the existence of time it is the flow from the present time to the past time of which we speak. Describing something that is not present but has been present presents a problem. Another problematic aspect is how we shall regard the present: How long is the time which could be considered as now? How do we define or measure the present?

> But even now it is manifest and clear that there are neither times future nor times past. Thus it is not properly said that there are three times, past, present, and future. Perhaps it might be said rightly that there are three times: a time present of things past; a time present of things present; and a time present of things future. For these three do coexist somehow in the soul, for otherwise I could not see them. The time present of things past is memory; the time present of things present is direct experience; the time present of things future is expectation. (Augustine, n. d., Book 11, chapter XX, no 26)

This evokes questions about the present such as: Will the past be present if I think of something that happened? Can the future be regarded as a present if I plan something that will happen? How can I measure the future that does not yet exist? How can I measure the past that no longer exists? How can I measure the present that is in constant motion from the future to the past and therefore does not have an extent? Augustine (n.d.) demonstrates the subjective nature of our perception of time in: the experience of the past in the form of memory, the experience of the present in the form of observation of the present, and the experience of the future in the form of expectation. In his example describing the singing of a psalm he emphasizes not only this complex

relationship but also the present as one part of the whole. In light of Augustine's problematization, the complex relationship of the three aspects of time can be seen in reflection.

3.1.4 Language and silence

Janik (1996) claims that a characteristic of practical knowledge is that it cannot be verbalized with precision. This does not mean it cannot be spoken about at all, but that it is only possible to verbalize parts of it. It can be transmitted with the support of words but it is mainly shown in action. In some epistemological contexts practical knowledge is known as *tacit knowledge*, a widely-used concept. Janik (1996) describes practical knowledge as knowledge that is executed in action and tacit knowledge as knowledge that makes the action possible. His definition of tacit knowledge is that it is knowledge that is not possible to express in logical propositions. Often the concepts of tacit knowledge and practical knowledge are used synonymously. However, Johannessen (1999) finds the concept of tacit knowledge problematic since it does not take into consideration other expressions than verbal expressions. Transmission can occur in other ways and nonverbal transmission in itself doesn't have to be problematic. Liedman (2001/2008) regards tacit knowledge as a non-verbalized knowledge that can be seen as a prerequisite knowledge to acquire the intended result of the action performed.

According to Liedman (2001/2008) there are two definitions of tacit knowledge. One is Janik's definition above – knowledge that does not have an exact verbal definition. This points to a knowledge that in its nature is tacit. The other definition is knowledge that no longer has to be expressed, that has become internalized and has become background knowledge. This refers to Ryle's distinction above but also to Polanyi's (1966/1983) *tacit knowing*. Polanyi is influenced by Ryle's concepts of knowing how and knowing that and focuses, as does Ryle, on knowledge that has been acquired, been internalized and become tacit. This can be understood as background knowledge and a precondition for expanding knowledge. Polanyi claims that all knowledge has a tacit dimension and that our minds only focus on a small part of a situation thus most knowledge is background knowledge or tacit knowledge. This also points to the interaction between the part and the whole. Haldin-Herrgård (2004) notes that Polanyi's choice of the word *knowing* instead of *knowledge* points to the fact that he sees knowledge as an activity and a process. Johannessen (1999) claims that there is a difference between knowledge that cannot be verbalized in full and knowledge that is possible to verbalize but does not need to be verbalized for various reasons. Haldin-Herrgård (2004) presents a compilation of 23 definitions of tacit knowledge from scientific literature showing additional aspects. Often tacit knowledge is described as verbalized knowledge that is difficult to communicate to others and difficult to teach. It is knowledge that is learnt by experience, by practise and by continuously practising it. It is knowledge that is personal, situated in the body and often second-nature and

self-evident to the performer. In some cases intuition, ideals, values, emotions, perspectives and belief are referred to.

Janik's (1996) definition of practical knowledge and tacit knowledge is similar to Wittgenstein, who does not write explicitly about tacit knowledge but refers to what is possible to express with words and what is not possible to express with words. The speakable is knowledge that can be expressed through propositions and the unspeakable is knowledge that can be expressed in other ways. The difference can also be between what can be said and what can be shown, especially regarding questions from aesthetic, ethical and artistic areas, which cannot have an exact language or a language at all. Wittgenstein illustrates this dilemma:

> Compare knowing and saying:
> how many meters high Mont Blanc is –
> how the word "game" is used –
> how a clarinet sounds.
>
> Someone who is surprised that one can know something and not be able to say it is perhaps thinking of a case like the first. Certainly not of one like the third.
> (Wittgenstein, 1953/2009, No 78, p. 41e)

A distinction between what can be expressed in propositions and what can be expressed in other ways can be seen in Wittgenstein's (1922) early work *Tractatus logico-philosophicus* where he treats language as a picture of what can be expressed through propositions. However, he also opens up the possibility of an interpretation that it is possible to express, or show, things that cannot be said, something he develops in his later philosophy (Janik & Toulmin, 1973). In his later philosophy he partially dissociates himself from earlier ideas and describes language as a tool for communication (Wittgenstein, 1953/2009). The nonverbal expression of the unspeakable through, for example, music was an idea associated with the aesthetics of the 19th century. Liedman (2006) refers to the change of view of music during the 19th century when instrumental music took the place of the vocal music as a musical ideal. The ideal music should be able to express the unspeakable without the help of words.

Words are often important when communicating and mediating tacit knowledge, but it is in action, and by application of knowledge, that tacit knowledge is learnt (Johannessen, 1999; Janik, 1996). The language used to describe situations and aesthetic expressions is vague and is used with the help of examples, allusions and comparisons. Language is connected to the situation, the persons involved, and the language game. Mediation of practical knowledge often takes place with the help of words but these must be connected to the situational context with, for example, corrections, encouragements or short commands (Janik, 1996). Language use, thus, may be understood as *speech acts*. Magee describes speech acts:

> …sentences don't exist by themselves in some sort of limbo; they are generated by human beings, and always in actual situations, always for a purpose. So you can really understand their meaning only if you understand the intentions of the language-users who uttered them. (Magee in a discussion with Searle; Magee, 1978, p. 191)

Speech acts implies that the meaning of a proposition lies not only in the words spoken but also in the proposition as an act. Some propositions can, says Austin (1979), be seen as acts rather than as verbal statements since they have an intention and deal with what the propositions do and not what they say. The significance of speech acts lies in their context and authority. They need a purpose, justification and a context to be valid. The concept of speech act has significance for passing on practical knowledge where a proposition must have contextual purpose and justification: it is an act and an encouragement to act. The language becomes a help to mediate knowledge but does not always contain direct information.

Wittgenstein's (1953/2009; 1969/1979; 1980/1984) concept of *language game* and his view of words as actions offer a basis for the concept of speech acts. Language game emphasizes the context through which a proposition should be understood since it is only possible to understand something in context. A language game is an interaction between people and the agreements they have in common; between different people and in different situations other language games take place. Language can be seen as action and function. The language game is in constant development since it is based on interactions between people. In a language game other non-verbal expressions can occur, for example, gestures, and Wittgenstein's examples are often drawn from music. It is also possible to see music as a language game, since its learning and practice are about communication, context and interaction. To participate in a musical context one must learn the language game of the situation.

Åberg (2008) describes indirectness of language as central in musical learning and performance. Using words that are not exact descriptions of an action makes room for an emotional understanding and thus may be closer to a non-verbal musical understanding. However, the communication has to be adapted to the situation and the people participating in the practice.

3.1.5 Johannessen's model

Johannessen (1999) believes that Wittgenstein's late philosophy has a practice perspective. Johannessen's interpretation is that the basis of a rule is not the rule itself but in the practice of applying the rule, and the context in which the rule is used. Otherwise a rule would be needed to regulate how the rule should be followed which would demand a rule to regulate how this new rule should be followed and so forth ad infinitum. Humans are constantly involved in a complex reality of practice in different situations. The emphasis is on situations where language is used rather than on the

language in itself. Wittgenstein, in his late philosophy, develops a view of language in which the concept of what a language is, is expanded to contain other forms of human communication, or expressions, that are not verbal.

Drawing on Wittgenstein's view of practice and language, Johannessen (1999) has built a model of knowledge in three interacting parts: propositional knowledge or theoretical knowledge, knowledge by familiarity, and skills. Propositional knowledge is the kind of knowledge that can be transmitted through language, a scientific or theoretical knowledge akin to Aristotle's concept of episteme. Johannessen observes that the knowledge of a practice can be a skill but also a knowledge by familiarity. Ryle's (1949/2002) concepts – knowing that to describe propositional knowledge and knowing how to describe skill – are not adequate, claims Johannessen. To knowledge of skill, which emphasizes the knowledge of executing a task, he adds knowledge by familiarity, where the execution of a task in new situations and experience within the practice are emphasized. In a later article, Johannessen (1999/2002) adds judgement as a fourth part of the model.

Johannessen claims that no theorists of knowledge discuss the role of judgement during the time span between Aristotle and Kant, who both saw it as important. Kant's view of judgement, according to Johannessen, is that there is no following of rules or use of concepts in infinite regress, i.e., definitions or rule-following ad infinitum. To immediately be able to use knowledge one has to use judgement. Judgement should be used reflectively and is dependent on experience, but experience is based on practicing. The ability to use judgement is also dependent on context. Bowie (2010) associates Kant's view of rules with Wittgenstein's view. Nussbaum (1990) describes Aristotle's use of judgement as a way to apply the insight received through experience and through understanding of the particular case. To be able to make a judgement, the situation must be evaluated and the choices adapted to the situation. Within ethical areas, precision or an exact system that might exist in science should not even be aspired to since it has no function. Wittgenstein's point of view is similar to Aristotle's:

> Can one learn this knowledge? Yes; some can learn it. Not, however, by taking a course of study in it, but through '*experience*'. – Can someone else be a man's teacher in this? Certainly. From time to time he gives him the right *tip*. – This is what 'learning' and 'teaching' are like here. – What one acquires here is not a technique; one learns correct judgements. There are also rules, but they do not form a system, and only experienced people can apply them rightly. Unlike calculating rules. (Wittgenstein, 1953/2009, p. 239e)

Wittgenstein here indicates some of the aspects of learning that are treated in the section on musicians' learning below (see 3.2): how transmission of knowledge occurs and what the concept of practical knowledge implies.

A clear line can be seen from Aristotle to Kant and Wittgenstein concerning experience, context and the particular in relation to rules. The line continues to Johannessen (1999)

since his model can be applied to professional knowledge and aesthetic knowledge. He also finds it important that all specific areas are researched separately especially regarding practical knowledge since they can be seen as particular cases and practical knowledge is not necessarily transferable.

3.1.6 To express a different kind of knowledge

Language is the traditional transmitter of knowledge; one example is the text in this thesis. Knowledge as science often has two requirements: it should be expressed verbally and it must be possible to prove it by scientific methods (Johannessen, 1999). Johannessen claims that these requirements are an inheritance from the logical positivists, even if the ideas have deeper roots, and that they affect research today. This is not a new discussion according to Nussbaum (1990). Aristotle claims that practical wisdom – phronesis – cannot be expressed as scientific understanding – episteme – without elements getting lost on the way. In aesthetic research and research about practical knowledge there are difficulties with expressing knowledge in full in a written text. It can therefore be difficult to research and to publish research within this area.

Today, the primacy of the written text is questioned within research on professions and aesthetic research as evidenced by CDs and video sequences that often accompany dissertations and other scientific publications. Other signs are the pictures, models and musical notation incorporated in printed documents to clarify issues that are difficult to explain solely by written text. Nussbaum's (1990) use of examples from literature to discuss human experience and philosophy is also a way of highlighting artistic expressions as a source of knowledge. But this, especially in Nussbaum's case, is also a part of a tradition, and Aristotle often cited plays and other literary works in his philosophical works. Janik (1996) provides examples from dance, although they are described in written text. He also asserts that arts and literature offer engaging examples that lead to reflection when conducting case studies. But it seems that by this he means that this reflection is for the researcher and not as an expression of knowledge within epistemology. Within artistic research there is a vigorous discussion about what can be expressed in research and how it can be expressed (Schippers, 2007; Schippers, 2014). Artistic research should be related to previous forms of research and expressions of research. Yet it has to be positioned as a form of research that might have different methods, processes and products than previous non-artistic research. Pehrsson (2012) describes documentation as central to research, and that artistic research has to find new ways of conducting and presenting research. Emphasizing methods that have been developed for other kinds of research may make those who work within aesthetic professions sceptical of artistic research. He notes, however, that written and spoken language is central to teaching music as well as presenting research.

Several scholars find it important that methods and knowledge production in artistic works are acknowledged in traditional research. Using ethnology or cultural analysis

since they acknowledge subjectivity, participation, use of the senses, and use of emotions, as a bridge in research is suggested by Ehn (2012), for visual arts and Sæther (2013) for music. Bresler (2005) claims that her musical knowledge can be used as a basis for knowledge about the process of research. She transfers musical terms and concepts such as form, dynamics, timbre, melody, polyphony and harmony to research concepts and usage. But she also relates action and concepts such as improvisation and ensemble playing to the research process. Similarly, Vicki Baum (1962/1964; see Prelude), in her autobiography, compares being a musician with being a writer. The transfer of knowledge into other areas is an example of Johannessen's (1999/2002; see 3.2.3) concept of *analogical thinking*, in which knowledge is transferred from its original context to a new context.

Feyerabend (1988) is interested in the limitations of written language discussed in the contemporary debate in light of Plato. Plato lived in a transitional period between orally transmitted knowledge and knowledge mediated by written language. In *Phaedrus*, Plato describes limitations of written text, how the text itself cannot instruct how it should be interpreted and can be misinterpreted since it cannot have a dialogue with the reader. Feyerabend (1988) relates Plato's observations to discussions of knowledge in various subjects today in which research and scientific results are built on unpublished material and collective interpretations and agreements about how something should be interpreted. He believes that the idea of an objective written text is an illusion.

Austin (1979) questions the bases of our knowledge. He states that the single most important source of knowledge is authority. This can be seen in a scientific text such as this thesis, in which the ideas and framework are built upon references to authorities. Preferably, these authorities will have expressed themselves in written text. Julia Kristeva explores this in her concept of *intertextuality*, that in all texts other texts are integrated, and Roland Barthes' view is that intertextuality occurs not only in texts but also in other sources and knowledge (in Liedman, 2006). These perspectives highlight that texts are complex and built on many different kinds of knowledge, explicit and implicit.

In this section I reflect on problems that occur in all kinds of research, but particularly within research about practical and aesthetic issues and professions. The first problem concerns the preference for written text. Can research on practical knowledge, where it is difficult to verbalize the knowledge since it is built on action, be regarded as research? Can the results be presented in the form of a text, and what will this text be able to say about practical knowledge? Feyerabend (1988) claims that language is insufficient and changeable, and that issues that can be described verbally in a situation tend to be emphasized and that knowledge that cannot be described becomes background knowledge. Another problem occurring in research built on personal knowledge is that it is about the knowledge of individuals and not about general knowledge. It is not necessarily possible to make generalizations from presented case studies. Nor is it possible to repeat the study with the same, or different, participants and reach an

identical result or to repeat the study with the same, or different, researchers and reach an identical result. In other words, the criteria of reproducing or proving scientific results as Johannessen (1999) describes cannot be met.

What is research? Is it the capacity to argue or is it that the authorities that form the basis belong to the right language game? Is it foremost about the language game and the context? These questions are addressed by Austin's (1979) notion of speech acts (see 3.1.4) where the acts are valid in the right context and with the right authority. But it can also relate to his view of authority as a source of knowledge. Wittgenstein's (1953/2009; 1969/1979; 1980/1984) concept of language game, about contexts for understanding, is also relevant. The language game in this thesis is based on following the literary genre to which this text belongs, such as proper writing style, using the proper authorities and arguing convincingly. One problematic area lies in definitions and uses of words such as science and knowledge, for example, the elevation of practical knowledge to an established form of knowledge. The incorporation of practical and artistic knowledge as 'real' science raises questions of power. In this case, institutional power and the individuals that shape and are in the discourse have the power of defining knowledge. The definitions and the epistemology justify one's position as a researcher. As B. Molander (1993) reflects, defining knowledge is a political battle.

Returning to the topic of this study, how practical knowledge is expressed and assessed at a high level within the orchestra may be illustrated. In music performance, scores, instruction books and descriptions can be notated, yet the goal is the resulting sound. The notations can be regarded as resources or secondary sources to the aural product. The aural product is what is evaluated when musicians play music. Even though audition processes can be different in different orchestras (Gillinson & Vaughan, 2003) the process measures the same kinds of knowledge. An orchestral audition often includes different stages in which different kinds of knowledge are judged (Davis, 2004). In the first stage solo pieces are played in which the technical and musical levels are assessed. The musical level can be thought of as an example of tacit knowledge. Orchestral excerpts are also played to demonstrate familiarity with repertoire and traditions and the applicant's preparation regarding attention to score details and knowledge of the musical context. After the solo audition, an orchestra test is often given in which the applicants play with the orchestra. In this part of the process the applicant is often not only judged by a detached jury but also by orchestral colleagues and conductor through the collaboration in the orchestral context. These stages are a first assessment of the applicant's knowledge, including personal musical expression and the ability to collaborate musically. Other aspects are also judged, such as the ability to perform under extreme stress. The third stage may be a probationary period of half a year to one year for which one to three applicants are selected. In this process the applicants are evaluated for the ability to adapt to the context, tradition and orchestral milieu and whether they can contribute to lift the orchestra to a higher musical level. All those who are selected for a probationary period are deemed to have sufficient musical ability to hold the position, and now their knowledge is tested in detail.

However, as Gillinson and Vaughan (2003) note, there are there different appointment procedures in different orchestras: auditions can last from three minutes to half an hour, and a trial period might last between one week and two years. While Haldin-Herrgård (2004) claims that it is unusual to test the tacit knowledge in organisations, in orchestral auditions a systematic testing of tacit knowledge is customary.

Osa (2007) claims that when playing music, knowledge is articulated as sound and that 'it is possible to communicate my insights, my knowledge in musical performance, because the unarticulated is woven into the articulated and can appear as an unarticulated insight that can be experienced by others' (p. 53). Performing music is, to Osa (2007), to communicate meaning.

The non-verbal knowledge of a musician is constantly judged by teachers, by audiences, by colleagues, by juries, and by pupils. There is always some kind of analysis and judgement by the listener. In this perspective, perhaps it is not meaningful to speak about tacit knowledge but rather about explicit yet unverbalized knowledge. Grimen (2010) claims that knowledge must be articulated, but not necessarily verbalized. Today when sounds, pictures and video can be distributed with the same ease as written language it may also be time to re-evaluate the primacy of written words in research. Wittgenstein (1966/1967) claims that the idea that an experience can be explained by a description is in error when speaking about music. He suggests that an explanation may reside in the expression in itself; in other words, it is not possible to explain the experience since the experience is itself the explanation.

3.2 On musicians' learning

The pedagogy of a profession is a defining feature of the profession. In a practical profession the knowledge base is transferred to new practitioners through a tradition, in which information, or knowledge, has been mediated in several stages (Thurén, 2005). Learning is often based on individual knowledge, and occurs through doing the tasks of the profession. Understanding this knowledge transfer or learning must take into account the understandings of knowledge presented in 3.1.

3.2.1 Apprenticeship

Janik (1996) argues that practical knowledge is tied to tradition as it is transmitted by imitation and in action. Transmission of practical knowledge takes place between individuals. Someone who wants to learn practical knowledge must contact an individual willing to share knowledge, or an institution where the required competence is available. Trust or confidence in the institution or individual who possesses the knowledge is essential to the transmission of knowledge. Learners require persons who

can mirror their actions, and see them from the outside and inside simultaneously in order to help them acquire practical knowledge.

The traditional environment for apprenticeship has usually been outside formal institutions, such as apprentice training of artisans or craftsmen. K. Nielsen and Kvale (2000) describe different aspects of apprenticeship. Apprenticeship takes place in a practice community in which learning occurs in a social organization, often moving from peripheral learning towards performing skilled tasks. During the apprenticeship there is an appropriation of professional identity through imitation and identification, and influence of the environment. Learning is not the result of formal education. Evaluation is done within practice and through constant assessment of skills, and a traditional apprenticeship often ends with a final assessment. These aspects of apprenticeship can be applied to classical instrumental education. Instrumental training is usually based on one-to-one teaching (Gaunt, 2011). Often the teacher gives individual lessons or open classes in the form of a master class. Within music education, apprenticeship is institutionalized, however, and therefore different from the model that K. Nielsen and Kvale (2000) present. However, they demonstrate that apprenticeship also occurs within institutional training, in which the apprentice alternates between practice and theory, or as a transition from institutional training in which the apprentice gradually transitions from theoretical knowledge to practical knowledge. One issue arising from their model is that of cognitive apprenticeship in the classroom, which is based on a model of learning in which the teacher's support of the student gradually ceases. The goal is that students will eventually have the ability to solve their own problems. Institutional music education is similar to cognitive apprenticeship in the classroom. However, K. Nielsen and Kvale (2000) illustrate this type of apprenticeship only with the learning of mathematical problems, which leaves what they consider to be cognitive learning unclear.

Apprenticeship in music education often occurs within formal educational institutions. If a student chooses to be educated outside institutions the teaching often takes a similar form (Davidson & Jordan, 2007). To some extent, K. Nielsen and Kvale's (2000) view of a practice community applies since the student performs more advanced tasks during training in relation to the surrounding social environment. This environment may include all possible musical contexts within and outside institutions in which students can perform. Students acquire a professional identity through education. They are evaluated continuously through practice and their education often ends with a final assessment such as a graduation concert (Cottrell, 2004). Liedman (1997) points out that the emergence of artistic institutions is based on two missions: to educate new artists and to establish standards for the arts. Institutionalized music education is characterized by a form of teaching which emphasizes tradition, is mediated by individual practitioners, and provides an initiation into the practice community

Dreyfus and Dreyfus (2000) believe that mastery is evidenced by bringing something personal to the performance, and that the learner should not become a copy of his or her master. To create a personal style, the learner may study with several different

teachers. The different teachers' contradictions will bring instability to the students' knowledge and force the student to make personal choices. Gaunt (2011) observes that one-to-one tuition is common in higher music education. The relationship between student and teacher in one-to-one tuition is complex and related to personal, musical and professional development. In her study she observed that power dynamics affect the relationship between the student and the teacher and the development and independence of the student. One-to-one tuition often involved a balance between transmission of knowledge and student autonomy. Trust between the student and teacher was vital. One-to-one teaching was also seen as problematic due to the close personal relationship. K. Nielsen (2006) emphasizes *transparency* in music education where there is no division between learning and practice, or application of knowledge. He means that music education is transparent since music in music education at all levels always is accessible to students, since it is performed. In his notion of transparency he addresses the relationship between student and the teacher, in which a teacher – as a musician – becomes a role model for the student. The transparency of musical performances also applies to other areas such as concerts and master classes. Through this transparency the student develops a clear understanding of educational goals.

El Gaidi (2007) stresses that the teacher should be well anchored in the practice, since the connection to the professional practice is a vital part of the transmission of knowledge. Anchorage in practice gives the teacher authority and knowledge about important aspects of professional life. It also enables the teacher to become a role model for the profession. El Gaidi (2007) claims that anecdotes, or stories, are a central part of education within the master and apprentice tradition. These stories are chosen to highlight aspects when teaching, and he claims that this tradition is still strong within music education. The teacher can transmit through stories what he or she values in the profession. These stories are also carriers of professional knowledge.

3.2.2 A model for learning

In Dreyfus and Dreyfus' (1988) model for learning, the learning subject relates to a task in different ways and makes decisions about how to solve a task in different ways. They call this model 'Five Steps from Novice to Expert' or 'Five Stages of Skill Acquisition'. The five stages, which represent different approaches to a task, are novice, advanced beginner, competence, proficiency and expertise. Dreyfus and Dreyfus do not claim that this is the only division possible or that all steps always occur. They also suggest that it is possible to change between different levels in different situations and that it is possible to perform a task in a different level than one 'belongs' to. The development from novice to expert in their model goes from following rules to acting according to situational observations, progressing from abstract rules to specific cases. The focus changes from conscious analytical problem-solving to intuitive problem-solving. It also moves from a focus on details to a holistic view. As learners understand the process better they take more personal responsibility for how the task is performed.

For the learner one of the most important parts of this process is increasing the number of examples that can be used as references.

The novice learns to recognize what is relevant for the task and to apply rules. The whole context does not have to be taken into consideration when solving the problem as the rules can be applied independently of the situation. The novice has not yet learnt to distinguish between occasions when a rule can and cannot be applied and is dependent on help to assess what is relevant in the situation. The novice's application of rules can be seen as context-free. Often the novice judges the result by how well the rules are followed.

The advanced beginner learns to apply more complex rules and to consider the context in which they are applied. It is easier for the advanced beginner to recognize important elements than for the novice. The teacher can point out the important elements but the advanced beginner's own experience is also useful. The advanced beginner learns to apply solutions to similar problems and uses both context-free and situational solutions. Context-free solutions are to apply rules and situational solutions are to apply experience. By gaining experience of different situations more possible solutions can be distinguished. Still, as with the novice, the advanced beginner has little responsibility for the result. The difference from the novice is that the advanced student considers more from the context and situation.

The competent performer has more experience and thus more possibilities for applying knowledge. The competent performer must consider several different ways to solve a problem or to perform a task. There is a choice of perspective from experience and rule knowledge, and there is also the need for a plan. The competent performer must learn to distinguish between what is important and what is unimportant in the situation. The result – how well the task is performed – is directly dependent upon the choices made in which the competent performer is solely responsible for the outcome. The task is performed detached, based on the choices made, and the competent performer's undertaking of the task makes him or her involved in and responsible for the result. This stage where the executor of the task is responsible for the results can be difficult and exhausting since the success or failure of the task is dependent on the chosen perspective. The main difference between the advanced beginner and competent stages is selecting a perspective, and the competent performer is therefore more involved and responsible for the result.

The proficient performer uses his or her experience from similar situations to see what is important in the context. Experiences of results from previous choices are incorporated into the knowledge. Often a holistic approach is used in the situation and the solution is based on intuition and knowledge. Patterns are seen holistically rather than as consisting of small parts. The proficient performer is focused on the goal and not on the decision-making; he or she can see the goal and decide what is important, but decision-making is still basically done analytically. The understanding of the task is intuitive but the decision is analytical. Intuition is not guessing or supernatural

inspiration, but an ability to perform actions without consciously analysing them. Proficient performers can sort experiences into categories and then find a possible solution; their experience enables them to choose from many similar examples. The largest difference from the competent performer is that a perspective is chosen based on experience in which there is an involved understanding of the task.

For the expert, knowledge is integrated into the person and he or she does not need to analyse the individual problem and the solution to solve a problem. In a normal situation the expert does not need to think about solving problems but can do what normally works. When a problem occurs, it is not solved by analysis of the problem and its possible solutions, but through critical reflection on the intuitive solution. When solving problems intuitively, much less time is used for analysis and comparison of examples than in analytical problem solving. The expert sees the goal and a way to solve it as one, able to focus on the goal and see the solution simultaneously. Since the expert chooses intuitively from many examples he or she can be seen as 'irrational'. In this final stage intuition, in which thought and action are combined, is the distinguishing feature.

Like Dreyfus and Dreyfus (2000), Janik (1996) points out that the expert is someone who can find innovative ways to solve problems, to apply practice in an unexpected way and to create a new standard. The expert has an interest in development, and might also have an educational role. Janik argues that it is important for a practitioner within the arts not only to possess expert skills to but to be able to bring something personal to the practice, such as the interpretation of a piece of music. Janik claims that an expert can see both the uniqueness of something and create a typical or representative example by seeing different possible similarities to other situations. Janik (1989/2002) describes experts as fascinated by problems, curious and critical. Their basis for being experts is not that they know things but that they are skilful learners. Their educational role is not telling their colleagues what they should know but giving them help with how to solve problems.

Ericsson, Krampe and Tesch-Römer (1993) focus on the acquisition of knowledge for expert performance. They observe that the amount of deliberate practice is directly related to the performance level; in their studies at least 10,000 hours during about 10 years was required for the development of expertise. Their research on musical expertise mainly addresses soloists, however in their study of violinists they find that the amount of practise done by the best violin students corresponds to the amount of practise time that professional violinists in a good orchestra did at the same age. They do not find this surprising since they expected that the best violin players would probably get work in a first-rate orchestra. In addition to deliberate practise on their instruments the study shows that the best musicians also spent more time on music-related activities. The study does not describe how to gain contextual knowledge, such as orchestral playing, but this kind of knowledge might be related to the same basic concepts. The amount of time spent on orchestral playing may correspond to the amount of knowledge gained.

Aristotle's description of the difficulty of doing good deeds due to external circumstances relates to how experts use their knowledge, since some of the problems can be overcome. Nussbaum (1993) argues that Aristotle points to four problems: that vital resources are lacking making the task impossible or the task difficult, that an object is missing making the task impossible or the task impossible at the moment. Two of these show problems with resources and two show problems with the object. Aristotle believes that the ability to solve problems in which resources are lacking is possible for a person who has cultivated practical wisdom. The comparison with the expert's performance is that when performing a task under conditions that are not optimal, problems can be overcome with practical knowledge and experience.

3.2.3 Rules, practice and examples

According to Janik (1996) practical knowledge is not based on rules but on a variety of examples or exceptions to the rule. He points out that the rules of practical knowledge are constitutive; they are rules that have a pattern-forming role which enable us to perform an action, rather than regulatory rules that determine how an action should be performed. Basically, practical knowledge, says Janik, is to be able to distinguish between rule and exception, and to find new ways to apply examples. For Janik, practical knowledge is the ability to follow a rule in a situation where there are no explicit rules. It is important to be able to identify the common denominator between different examples. The different rule types can be traced to John Rawls' (1955) definition of two types of rules: *the summary view* and *the practice conception*. The summary view is the result of past decisions and experiences, and the view of the rule is that the individual makes the decision about the particular case. The premise is that other individuals can make the same decision under the same conditions. There is a direct application to the particular case. Since the application is made under similar recurring situations it may be seen as applying rules, however, an analysis of the current situation must be done before the rule can be applied. The rule can be seen as a guide or generalization from previous experience. Practice conception rules define the practice, and without these rules the individual practice will not work. The rules govern the case. An example of this might be how to play chess; if the established rules are not followed the game played is not chess but another game. The rules exist independently of whether someone is playing right now, and they define the game of chess.

Wittgenstein (1953/2009; 1969/1979) makes no distinction between regulative and constitutive rules, as Janik does, but regards them both as rules. To follow a rule, according to Wittgenstein, is to follow the rule without choosing; you follow it blindly. However, choosing to follow a rule is a practice and this practice cannot be governed by rules in perpetuity. Judgement must be used to apply a rule, and Wittgenstein (1969/1979) points out that while the normal circumstances for applying a rule are difficult to recognize, it is often easier to assess the abnormal. Learning to apply rules correctly, and learning to recognize situations, occurs in action. What Wittgenstein

demonstrates here is that regulatory rules are governed by practice, as are constitutive rules. Wittgenstein emphasizes the role of experience and judgement in the ability to apply the rules, and he sees experience as dependent on the amount of time one has spent learning and the personal acquisition of knowledge.

To use practical knowledge is to apply knowledge to a situation that may be possible to regard as unique and familiar at the same time (Janik, 1997). Application cannot consist of applying a fixed rule, but can be to see the similarities between various examples that are meaningful in context and to adapt them to this context. The rules here are not explicit, but are visible in application, Janik calls them 'rules of thumb'. Part of this knowledge is the ability to use experience, to assess a situation and apply knowledge when there are countless situations and possible applications. With experience it is possible to determine which situations are normal and which are abnormal. Knowledge is always dependent on the context in which it is incorporated. The ability to perform an act depends on the ability to apply knowledge. First the typical case is learnt, after that the exceptions to the typical case.

Aristotle also wants to emphasize, according to Nussbaum (1993), that practical knowledge can never be scientific knowledge, episteme, since scientific knowledge should relate to universal truths and rules. Practical knowledge must always be about the particular. Knowledge of the individual case can only be understood with insight from experience. Rules can only be used if they are correct in relation to the unique case. Nussbaum emphasizes Aristotle's description of why practical knowledge cannot be regulated entirely: it must be able to change, it must have many possible solutions and it must be applied to a unique case. In addition to deductive and inductive reasoning, Aristotle offers arguing with examples as a third method (Johannessen, 1999/2002). It is not about arguing from part to whole or from whole to part, but, through understanding an example making possible the transfer of experience to a new situation, which Johannessen calls analogical thinking. Nussbaum (1990) explains Aristotle's ideas as 'an ability to recognize the salient features of a complex situation' (p. 74) in which perception, experience and judgement lead to practical skills rather than the ability to draw general conclusions by examining a sample or conclusions from assumptions.

Montaigne (1588/2003) presents a different way to consider the idea of the example in his *Essays*. He describes bad examples as more instructive than good examples and illustrates this with an anecdote about a teacher forcing his students to listen to a bad musician to learn from his mistakes. In a master class students listen to each other and can hear both good and bad examples and practise their assessment skills. This notion of master classes as an area of learning for the listening students is also recognized by K. Nielsen (2006).

3.2.4 The typical example and the unique case

> Plants, like Algebra, have a habit of looking alike and being different, or looking different and being alike; consequently mathematics and botany confuse me. (Feyerabend, 1988, p. 157)

An example is always an example of something, but the context determines what the example is an example of. Within music education, teachers can emphasize different things to show their students, and the same piece of music can be used for examples of different things and at different levels such as a sonata, a cadence or a trill. A piece of music can also show family resemblance with various other pieces of music, where the common denominator may be different. Wittgenstein uses *family resemblance* for concepts and phenomena that have similarities with each other but no system of similarities:

> (66)…we see a complicated network of similarities overlapping and criss-crossing: similarities in the large and in the small. (67) I can think of no better expression to characterize these similarities than "family resemblances"; for the various resemblances between members of a family – build, features, colour of eyes, gait, temperament, and so on and so forth – overlap and criss-cross in the same way. (Wittgenstein, 1953/2009, No 66-67, p. 36e)

Cassirer (in Liedman, 2006) claims that a similarity is not a characteristic but a way to consider the particular in several different objects. In an example, the particular that is to be exemplified must be shown, and the similarity must be evaluated by an individual. Wittgenstein (1953/2009) draws attention to the individual's responsibility to demonstrate the similarity, and to define what a similarity is. Wittgenstein also points out the role of examples in practice:

> (71) …One gives examples and intends them to be taken in a particular way. – I do not mean by this expression, however, that he is supposed to see in those examples that common feature which I – for some reason – was unable to formulate, but that he is now to employ those examples in a particular way. Here giving examples is not an *indirect* way of explaining – in default of a better one. (Wittgenstein, 1953/2009, No 71, p. 38e)

He shows that examples have a concrete meaning, and that they have a function as an example and not only as a particular case. With music, to find the unique case and the typical example at the same time, it must be possible to simultaneously see similarities with other works and differences from other works. Here Wittgenstein's concept of familiarity can be applied, as different works can have different types of family resemblance. A rondo and a sonata by Mozart have a certain kind of similarity, but a rondo by Mozart and a rondo by Beethoven have another type of similarity. Yet they are in themselves unique works. Returning to Dreyfus and Dreyfus' (1988) model, an

example must be an example of something, someone has to point out the example and demonstrate what it exemplifies. The novice may see the example as a rule, when it really is an exemplar or model. The development from novice to expert includes developing the competence to regard something not as rule, or an exemplar but as a unique case.

The view of the performer and artist changed during the 19th century, the emphasis on craftsmanship declined and, instead, the creative individual was idealized for his or her creativity and artistic genius (Liedman, 1997). Originality, and the breaking of rules, became the norm. But being able to recognize a rule, or the typical example as a rule, was still important since in order to violate a rule the rule must exist.

To learn a practice, says Wittgenstein (1969/1979), it is not enough to learn the rules or to regard unique cases; it is also necessary to regard the situation as a whole.

> 140. We do not learn the practice of making empirical judgments by learning rules: we are taught *judgments* and their connexion with other judgments. A *totality* of judgments is made plausible to us. (Wittgenstein, 1969/1979, p. 21e)

This notion of totality raises the question of how a selection within the totality is made.

3.2.5 Selection, intuition and imagination

Nussbaum's (1990) interpretation of how a selection or choice is made according to Aristotle can also be fruitful when considering aesthetic as well as ethical issues. In order to make a choice one must be able to imagine possible solutions. However, according to Aristotle, they are not comparable. It is not possible to measure values to the same standard and find the best rational choice. Having standards could potentially facilitate choosing. But, according to Aristotle it is not possible to find different parameters in the various choices that are exactly comparable, which makes this type of seemingly rational choice impossible. The choices are made instead with knowledge about what and how to choose and even of what not to choose. The second point relates to the first and is that the particular prevails over the general. Aristotle stresses here that the particular case should be resolved as a unique case and that it is not possible to apply general rules. Experience instead of systematic science should be used to consider the issue. It is related to Aristotle's view that phronesis cannot fully be expressed as episteme. A third point that Nussbaum presents is that in decision-making, emotions and imagination are rational. Imagination, as Aristotle presents it, is based on reality and not on creating an unreality. It must be selective and discriminating and create new possibilities through experience and new ways of combining objects. Aristotle, in Nussbaum's (1990) translation and interpretation, introduces the concept of *deliberative phantasia*. This concept can be understood as the ability to link different sensations together with imaginative ideas to form a unity. Correct choices can be made with the help of emotion since they cannot be based solely on what seems like rational

decisions. Both intellect and emotions are necessary to understand the situation. According to Nussbaum's interpretation of Aristotle, these three elements co-operate when one makes a choice.

> To argue that emotion and imagination are essential components of practical knowing and judging is to suggest very strongly that good judging will at least in part be a matter of focusing on the concrete and even the particular, which will be seen as incommensurate with other things. (Nussbaum, 1990, p. 83)

Although Aristotle and Nussbaum are primarily concerned with ethical issues, these ideas can be applied to practical skills and aesthetic issues.

The final aspect of emotion and imagination can be linked to the concept of intuition. H. Larsson's (1912) concept of intuition is similar to Aristotle's deliberative phantasia. H. Larsson (1912) sees intuition as synthesis, and an enhanced capability to understand and combine. He also refers to intuition as the ability to create something new in the process. Intuition provides a solution as an experience that has not been consciously reflected upon. H. Larsson also defines intuition by contrasting it with a discursive view. A discursive solution shows a gradual or progressive solving of a problem, but an intuitive solution implies that the subject is able to perceive a solution within diversity. An intuitive solution is possible when the subject can sense and weigh all the possible elements against each other simultaneously. To achieve an intuitive solution requires a diversity of options or starting points, not only one, claims H. Larsson (1912). He asserts that an intuitive solution requires that all factors be weighed against each other as a whole. This is similar to Nussbaum's interpretation of Aristotle above. The intuitive solution, says H. Larsson, could be similar to the reflected solution. However, a reflected solution may also be a means of analysis, which the intuitive solution cannot be. Intuition is a flow rather than something static or something that can be broken up into analytic tools in the process.

H. Larsson (1912) also describes the concept of *henid*. A henid is a vague unformulated thought or feeling. As an example, H. Larsson considers the process of composing. He believes that a composer can have an entire opera in his head as a finished model, but not concretized or notated. For H. Larsson, this concept is a deep form of intuition, which is expressed as an image or a feeling. H. Larsson's interpretation of the concept henid can probably be traced to Landquist's interpretation in a volume published a few years previously. Landquist (1906) argues that the concept is useful and develops it from Weininger's original meaning (Weininger, 1903/1906). Weininger used the word to describe women's incomplete and inadequate understanding of the world. Landquist, on the other hand, argues that thinking in henids is rational and is used in all contexts by everybody. He believes that it is possible to 'think with emotions', to know or have a sense of how a problem should be solved even if it is not explicit. This process, or this feeling, is associated with forgetfulness or incorporated in knowledge that has once been conscious. Hence the henid can also be understood as pre-understanding or background knowledge that no longer needs to be articulated

verbally. He believes that all of our acquired knowledge is incorporated into the henid knowledge. He also believes that it can provide a feeling of how a problem should be solved in a concrete situation. This should not be confused with the 'primitive henid thought', which can be understood as the first unreflected impression, says Landquist (1906). There is a qualitative difference between a henid based on background knowledge and combining ability and one based on an unreflected prejudice from a feeling.

Landquist (1906) compares the henid concept with H. Larsson's (1892/1997) understanding of intuition, noting that the explanations resemble each other, but contrasting H. Larsson's concept of intuition as a synthesis of knowledge that can quickly be combined with the henid as an emotional association. It is difficult to draw a clear dividing line between these two concepts. Landquist (1906) sees music as a parallel to abstract concepts, which can be understood and used but are difficult to explain. Music is strongly linked to emotions yet the individual listener or practitioner has a subjective relationship to music that is based on previous knowledge and experience. According to Landquist, this is 'a way of thinking with emotions' or henid thinking. Landquist (1906) claims his interpretation of henid is similar to William James' concept, *feelings of tendency* (James, 1890/1931).

Although the concept, henid, is a relatively recent invention, similar ideas are found in earlier epistemology. For example, Aristotle distinguishes between an object's form and an object's matter. In some contexts an object's form, which is seen as the not-yet-performed action or object, is seen as a template for what is to be performed (Aristotle, 1995a). The form can possibly be seen as a ready-made template rather than including emotional content as a henid. Liedman (2006) observes that concepts of form and matter have permeated the Western history of ideas. He believes that in aesthetics and in the understanding of artistic expression these concepts are relevant in a historical as well as in a contemporary perspective.

Dreyfus and Dreyfus (1988) do not separate practical knowledge and intuition. They choose to use the concepts of know-how and intuition synonymously since they believe that the division between knowledge situated in the body and knowledge that is primarily cognitive is not possible. They argue that in a situation that requires action these two concepts are synonymous. Åberg (2008) stresses that imagination and associative thinking are important parts of performing music and of musical expression. He suggests that the ability to use imagination and associative thinking might be integral to the maturation of music students. He also shows how teachers consciously use this kind of thinking when teaching as well as when they try to develop students' musical expression. The sense of how to perform something for Åberg (2008) is closely connected to having an experience of the performance as a whole. However, if the student relies too much on intuitive processes when performing, Åberg (2008) claims it may prevent the student from learning since reflection is a basis for learning. To be able to use different approaches to a problem is a way of expanding knowledge.

3.2.6 To learn from and in the context

Alice Chalifoux (Pike, 2003) began working as an orchestral harpist in the Cleveland Orchestra. In an interview she recalls that her lack of experience in orchestral playing made the work difficult after she won the audition.

> I was not very experienced in an orchestra. I did everything mainly by ear for the first six months. I used to get lost all the time. I wasn't used to playing in an orchestra. (Interview with Chalifoux 8 December, 2002, in Pike, 2003, p. 24)

Her technical and musical level as a soloist was high enough, but she lacked contextual knowledge. It is also possible that she did not have the propositional knowledge required in an orchestra.

To learn in a context is related to Wittgenstein's (1953/2009; 1969/1979; 1980/1984) notion of language game. The context in which something is learned must be anchored in the language and the agreements specific to the particular situation. Language games do not only occur in verbal language but may also be evident in other kinds of expression. Johannessen (1999) argues that the educational environment is important, and that learning practical knowledge must be anchored in the situation or context in which it is used. Otherwise it is not possible to teach and transmit it. Liedman (1997) points out a difference between participating in an organized system of apprenticeship and learning the same things in a school. The school is separated from the practice and is a model of reality rather than reality itself. The school also contains other elements than those aimed at in the actual production. Dreyfus and Dreyfus (2000) demonstrate that the relevance of the practice of the community is dependent on the type of learning to be done. Drawing on Wittgenstein and Heidegger, they argue that all learning takes place in-the-world. Taking chess as an example, they differentiate between learning the game of chess and learning the chess community practice forms. The first can even be taught by a computer; the second is dependent on the practice community. Since orchestral playing takes place in a practice community, learning orchestral playing takes place in a practice community.

The concept of *situated learning* is often used when describing how someone is educated into a profession or a practice. Lave's (2000) studies of Liberian tailoring apprentices has been important for the understandings of situated learning. In these studies, she focuses on apprentices learning from masters through legitimate peripheral participation in which the apprentice slowly gets into the profession, into a professional identity and into the community. Learning in the orchestra is somewhat different from the apprentice tradition since an orchestral player performs the same tasks no matter what he or she has achieved. Whether the performer is a student, an amateur musician or a professional musician he or she has to realize the same part. In the normal positions in the orchestra it is not possible to start as a peripheral participant with the option of performing more difficult tasks later. Heiling (2000) argues that applying Lave and

Wenger's theory to orchestral musicians' learning is problematic since all members in the orchestra participate with the same routines, rules and artistic criteria. But this does not mean that the working conditions are the same in all positions. A musician who is asked to play with the first violin section has to play the same part as the rest of the section. A harpist has to play the harp part. Within education and amateur orchestras there are exceptions such as putting an inexperienced musician next to a more experienced one, or having an inexperienced musician double a part that a more experienced musician plays (Heiling, 2000; Lonnert, 2011). In these cases, the responsibility of the inexperienced performer is handed over to the more experienced performer and there is a kind of apprenticeship. However, it may not always be possible to give support to the student or amateur musician in this manner.

Luff and Lebler (2013) acknowledge the tension between one-to-one tuition and collaborative learning in music education. They claim that there are skills that have to be learnt in a collaborative context:

> ensemble skills such as the ability to listen and respond appropriately to the needs of a section in terms of, for example, intonation, sound quality, rhythm, dynamics, balance and articulation;
>
> performance skills including the ability to follow a conductor or section leader, and the ability to lead a section;
>
> good ensemble etiquette and teamwork skills; and
>
> effective self-evaluation abilities. (Luff & Lebler, 2013 p. 174)

They claim that these different skills can be trained within formal education. The orchestra can be regarded as a musical practice community that an individual may join. It is, however, different from most other musical practice communities due to its clear hierarchical structure from conductor, concertmaster, and assistant principal through to the tutti musicians (Liljeholm Johansson, 2010). Learning in the orchestra also differs from other examples in the apprenticeship tradition since it is institutionalized and only contributes a part of musical learning, in the sense of learning as joining a community and developing identity as a musician. Most musicians also have access to other music performance practice communities, such as additional orchestras and ensembles. This diversity suggests what Smilde (2009b) calls 'portfolio careers'. These different ensembles or ensemble forms may provide knowledge that can be utilized in various communities of practice. Kvale and K. Nielsen (2000) describe learning in different practice communities as one of the resources for learning.

In a professional orchestra, musicians commonly apply for a specific position, such as the position of second flute. Winning an orchestral audition may be regarded as a *rite de passage* toward professional identity (Kvale & Nielsen, 2000) due to the competitive formalized process. The professional identity of an orchestral musician is dependent on

being employed. There is no systematic career path through the hierarchy, for example from the second flute to the first flute, although it sometimes may occur. It is also possible to change from a higher position to a lower. Davis (2004) observes that it is more common to advance to a higher position by moving to another orchestra than by rising within the hierarchy of the orchestra in which the musician holds a lower position. In some orchestras, players may rotate within a section when it enhances the results. Some orchestras have rotation in the ranks but not all (Davis, 2004).

Kvale and K. Nielsen's (2000) account of learning as development of professional identity within the practice community describes rites and ceremonies within the profession. An orchestral audition can be seen as a rite in this sense. Due to the fact that a professional musician is expected to do the same tasks no matter how experienced he or she is, legitimate peripheral learning does not describe what occurs within the professional orchestra. Learning in the orchestra as a professional is situated, but cannot be regarded as peripheral. A music academy student who participates in a professional orchestra is expected, and may get paid, to do a job at the same level as a more experienced musician (Cottrell, 2004). For musicians, learning in the orchestra may be about deepening knowledge. Having gained a position the musician is competent but may still develop his or her knowledge. Orchestral playing is only one part of the music student's or the professional musician's learning since learning may include many learning situations, which are not always directly related to orchestral playing, thus the process of learning orchestral playing demonstrates several differences from situated learning theories.

Kvale and K. Nielsen's (2000) idea of resources for learning in a practice community is inspired by the theories of situated learning and social practice developed by Lave and Wenger concerning communities of practice, professional identity and learning without formal education. A section of Kvale and K. Nielsen's (2000) model of learning that can be applied to orchestral playing is one they call *evaluation through practice*. They propose different kinds of evaluation: *consequence evaluation*, which can be understood as direct evaluation; and *continuous evaluation*. They also believe that evaluation can make a professional standard visible. In an orchestra anything played has a clear auditory consequence; the individual musician is constantly reflecting upon sounds in context – an example of consequence evaluation. Evaluation is also done continuously by the conductor and by fellow musicians. This is fundamental to rehearsing: trying musical ideas and evaluating the possibility of change. It is the continuous evaluation of the daily work. In a professional orchestra, a consistent standard of quality must be maintained, and it is in the interest of the practice community that there is a will for collective improvement.

A musician's knowledge can be consolidated through the audition process in which minimum orchestral standards are made explicit. This may be more difficult in an amateur or school orchestra where the participants' ambition levels and knowledge can be more varied, making development more difficult (Heiling, 2000). On-going evaluation also takes place in public, for example, through reviews of concerts.

There are several layers of consequence evaluation that affect the individual musician in the orchestra: one is the individual musician's reflection, another is the conductor's reflection on the individual musician's input in relation to the orchestra as a whole, and the conductor's own interpretation. All individual musicians in the orchestra reflect on and influence each other's musicianship. A rehearsal includes a collective and individual evaluation of what does and does not work, what is desirable in this context and interpretation, and what is not desirable in this context and interpretation. For a musician in the orchestra, judgement is based on the consequence evaluation in context. This can be understood in light of Johannessen's (1999) model of practical knowledge consisting of the interaction of skill, knowledge by familiarity, propositional knowledge and judgement. For the individual musician in the orchestra, consequence evaluation includes one's own reflection but also external input from colleagues and conductor. This means that the application of individual judgement interacts with external judgement.

Hager and Johnson (2009) propose a theory of learning in the orchestra as increasing capacity for *context-sensitive judgements*. They believe that learning in the orchestra includes peer-to-peer practice-based learning, tacit learning in groups, emphasis on fitting into the group's style rather than having a personal style, continuous learning throughout professional life, and context-rich learning. Thus they highlight differences between learning in context and learning in a traditional learning situation. 'Context-rich learning' refers to learning to adapt to different situations. They point out a problematic situation; that an audition for the orchestra demonstrates other skills than orchestral playing requires. They also point out that in an orchestra there are several layers of 'individual', from the individual musician to an individual section that will affect the musical performance and learning. They argue that peer-peer equality is important in a section of the orchestra, although the orchestra itself is hierarchical.

3.3 Individual and collective

Christophersen (2013) observes a paradox between the individual and the community in music education and music performance. Music education often focuses on individual learning but music performance is collective and collaborative. She points out that all individual students must be willing and accepting collaborators regarding the exercise of power and self-control within the practice in which they are participating.

One of the characteristics of practical knowledge is that it is personal. However, this must be considered in light of Feyerabend (1988) and Liedman (2001/2008) who claim that all knowledge has a tacit dimension. This makes all knowledge, not only practical knowledge, personal. According to Janik (1996) practical knowledge is dependent on the experience of the individual but is also often a practice in a group or particular

context. Often this knowledge may not be transferable to another setting or generalizable because it consists of experiences from specific individuals.

A good orchestral musician must have the ability to collaborate musically with other musicians (Davis, 2004), for example, to be able to adjust one's tone or nuance to the context: to other musicians, to the specific piece played and to the concert hall. But a good orchestral musician also must have an individual sound, and that sound is one of the key competitive factors in auditions. The sound or tone together with phrasing and expressiveness conveys the musician's musical personality (Cahn, 1992). Through tone, the individual musician is able to have a unique expression that may distinguish him or her from other musicians. At the same time the individual musician has to be able to adapt his or her sound to other musicians. Shameyeva (1994) links the quality of harp tone to technique, especially to articulation, i.e. primarily the movement of the fingers, but also hands and wrists. Physical playing movements are specific to the tradition or school in which one was taught, in her case, the Russian school. The quality of the tone, and required aesthetics, are therefore closely related to one's education. Renié, (1946/1966), a representative of the French school, also links articulation, wrist movement and tone in her method. She notes differences between her method and Russian and American schools. Salzedo and Lawrence (1927/1929) – those whom Renié probably refers to as the American school – not only link position and action with tone but also gestures. These gestures are particular to the Salzedo school (Owens, 1993). The different technical and physical approaches in these schools may affect the collective aesthetics required in these schools. Since Smilde (2009b) connects the notion of sound with identity, one's personal sound or tone and the educational aesthetics of a school can also be closely linked. Cottrell (2004) points out that schools are known for their heritage, where it is not just important whom the musician studied with but who the teacher's teacher was and so forth.

Chadefaux, Le Carrou, and Fabre (2012) found in their research that '[t]he most interesting result is that harp plucking movements are particularly complicated and specific to each performer. Thus, for a given musical context, every harpist performs her/his own kind of finger movement, which is repeatable' (p. 848). They also note that musicians who practise regularly have more control over tone production than musicians who do not practise as much.

The contrast between individual musical personality and collective collaboration calls to mind what Åberg (2008) calls *paradoxical fields* in music performance and teaching. He claims that these fields in music performance are important, and the tension between the paradoxes should not always be resolved. The musicians thus have to learn to navigate within these fields.

Orchestral musicians' knowledge can be seen as personal, like all knowledge, but especially as knowledge that is passed down through a tradition rather than studied. The orchestral musician's knowledge is also collective knowledge. It should function in the same manner throughout the playing collective, and a musician must be

interchangeable with another player of the same instrument (Cottrell, 2004). The orchestra is a collective consisting of individuals who share a collective knowledge about practice. This practice is contextual and changeable. This can possibly be seen as lifelong professional situated learning for the individual musician or as situated learning as a collective. In the situated knowledge of the collective, the collective ability is developed at the same time as the individual musician's ability is developed. The individual musician is a part of the collective and can also influence the collective level.

The knowledge of an organization, such as an orchestra, is not static but changes with both the individual's knowledge and the collective knowledge. The model for organizations' tacit knowledge that Erden, von Krogh and Nonaka (2008) developed, similar to Dreyfus and Dreyfus' (1988) model of learning, has four levels. Erden, von Krogh and Nonaka (2008) focus on the quality within tacit knowledge. The first level, *the group as an assemblage*, is one which has not worked together before. The second level is called *collective action*: in this level the group experiences and acts together as a whole. The group develops routines and habits and a group culture, and they develop a common language and common values. But even if a group community develops and the group acts together, they are not yet prepared for situations in which uncertainty and unfamiliar situations occur. The third level is called *phronesis*, a term borrowed from Aristotle. Erden, von Krogh and Nonaka translate phronesis as practical wisdom and use it with a figurative meaning transferred from the ethical context in which Aristotle uses it (see 3.1.1). Phronesis is when the group members use their knowledge in the current situation, and the goal and the strategy to achieve the goal are shared by group members. The specific characteristic of this level, according to the authors, is the collective use of the group's experience to be able to make appropriate decisions in a particular situation. At this level the group shares its knowledge and it is a resource everyone can share. The fourth and highest level, *collective improvisation*, is defined as an ability to react quickly and appropriately in an unexpected situation, also requiring innovation – to be able to solve problems in new ways. Working at the highest levels is not always necessary but dependent on the context and the goals. Erden, von Krogh and Nonaka (2008) also define *group tacit knowledge*, GTK, as a social construction: it is action based; it will have a synergistic effect; the group acts as a group; and the group has common values, norms and practices. The group must share the same goals and a common understanding of how to achieve these goals, and they should have an opportunity to collectively address problems that may arise.

Aspects of the orchestra members' common knowledge can be understood in the light of Erden, von Krogh and Nonaka's (2008) model. The orchestra can be seen as two levels in relation to the collective and individual level; the first level is the individual orchestral musician's relationship to the orchestra, and the second level is the individual orchestra's relationship to the common international orchestral culture. One consequence of these levels is the individual musician's relationship to the common orchestral culture. Orchestral musicians and conductors must have the common knowledge required in all orchestras, such as goals, values, norms and practices.

However, within any individual orchestra there may be shared values, norms and practices that differ from other orchestras. The common tacit knowledge of the group depends on a majority within the group holding common understandings in the particular context. An assembly of musicians who have not worked together before starts at the first quality level of Erden, von Krogh and Nonaka's model where they must create a culture for working together.

Non-verbalized knowledge has also been studied in organizations in which knowledge can be seen as both collective and individual, or as collective knowledge that is practised by individuals. Haldin-Herrgård (2004), who has developed a method of identifying tacit knowledge, argues that measurement of knowledge that is not verbalized is rare in organizations. She tries, however, to identify expressions of tacit knowledge that exist in the language but that are not traditionally viewed as expressions of knowledge. Frimodt-Møller (2010) addresses musicians' relationship to norms and coordination. He relates this partially to orchestral playing, of which he has experience as an amateur violinist. He believes that the musicians' coordination in a music performance is dependent on the individual musician's relation to norms, and that decisions must be made individually in relation to these norms. That is, the decision made according to the individual's norms relates to external norms. He believes that there is a decision hierarchy in which certain norms take priority over other norms in the context. He presents three considerations regarding choices of coordination: rules that are assumed to be common knowledge, expectations of how others should act in the specific situation, and strategies that will lead to the desired goal or outcome.

3.4 Orchestral musicians' interpretive space

According to Frith (2012), orchestral musicians' interpretive space is dependent on the hierarchy.

> In the orchestral musical world the creative hierarchy is organized around the idea of the composer. Music authority is materialized in the score, which provides instructions to the musicians as to what to play. There is still room for interpretation, of course (a written note is not the same thing as produced sound), but for orchestral performances, at least, this is under the secondary authority of the conductor. (Frith, 2012, p. 66)

Frith (2012) argues that musical performers are not always seen as 'creative', since the concept is often used for the creators of musical works rather than the interpreters of musical works. He also observes that orchestral musicians, as well as other ensemble musicians from different genres, see the performing of music as a collaborative collective process. Hence creativity, if performing music can be seen as creative, is not necessarily an individual activity. Interpretive space is dependent on the collective of the orchestra. But Frith (2012) also recognizes that there are different positions in an

orchestra, for example, the 'principals' have more scope for individual musical creativity than 'rank and file' musicians. Cottrell (2004) states that musicians often see creativity as personal musical expression. Orchestral musicians, however, must exercise creativity within limitations, for example, when playing for a ballet company the musicians' performance has to be predictable for the dancers.

Interpretation is a core focus for a professional musician in the Western classical tradition. 'Interpretation' may have multiple meanings; interpretation of the score is one aspect, while another is the musician's personal interpretation of the musical work. Helmerson (1990) describes these two different aspects under the heading of creativity. The first aspect is the preliminary work of interpreting the score, which is not about being able to reproduce the score exactly but about understanding the composer's intentions and the context. He finds it essential to see the work as a whole, to see how the different parts relate to each other and to be able to shape it musically. The creative process of learning the part is the development of an understanding of the musical work and a basis from which the work can be performed. The other aspect is the creative process of performing which may include how to perform a piece on the border between intuition and awareness. For Helmerson, intuition is based on knowledge and is in constant change, and creativity is an on-going activity. He describes two kinds of creativity. In the first the musician reconstructs the work with the aid of his or her knowledge and his or her objectivity. In the second the musician is to be able to reproduce it using intuition and subjectivity. Thus is it possible in the performance for the musician to create an illusion of creating music in the moment.

Similar to Helmerson's work with learning a musical piece, Hooshidar (2009) describes the difficulty of making dance students understand that working with technique includes working with expressions. Her role as an educator is to help the individual dancer to be able to understand what Helmerson (1990) sees as a basis for his work. She emphasizes that the dance student's work is not an end but is a means to a goal. Hooshidar (2009) views her educational challenge as helping students finding their interpretive space, the space where the personal interpretation can be shaped. The personal interpretation becomes a mental process of understanding. It is also an activity. The individual dancers become responsible for the interpretation and at the same time learn to regard themselves as co-creators in the context. When interpreting a choreographer's work, a dancer's role is similar to that of a musician. However, an orchestral musician has two layers to interpret: the composer's work and the conductor's interpretation. Orchestral musicians' space for interpretation will therefore be less than or different from musicians in many other contexts. The two notions of interpretation are similar to Aristotle's (1995b) concepts of poiesis and praxis, in which learning a piece can be seen as poiesis – the act leading to the goal, and the concert situation as praxis – in which the action is the goal. Techné is thus linked to the craftwork of a musician and phronesis to the practical performance, although the boundaries between them are fluid.

Nussbaum compares orchestral musicians with jazz musicians:

> Consider the analogous contrast between a symphony player and a jazz musician. For the former, commitments and continuities are external, coming from the score and the conductor. Her job is to interpret those signals. The jazz player, actively forging continuity, must choose in full awareness of and responsibility to the historical traditions of the form, and actively honor at every moment her commitments to her fellow musicians, whom she had better know as well as possible as unique individuals. She will be more responsible than the score-reader, not less, to the unfolding continuities and structures of the work. (We can also say that as the classical player ascends the scale of musical excellence, so to speak, becoming not simply a rote reader of the score but an active thinking interpreter who freshly realizes the work at each performance, she resembles more and more the jazz musician in the nature of her attention.) (Nussbaum, 1990, p. 94)

Nussbaum suggests here that the orchestral musician's level of competence gives artistic freedom and that creativity also might occur in a limited space. A parallel to this could be Bowie's (2010) reflection on improvisation by jazz musicians. He believes that jazz musicians rarely play something completely new but often use new ways to combine extant ideas and that is the innovation. Improvisation is often close to the borders, limits, or rules of the genre and also requires adjusting to the musical context. A consideration of Bowie's reflections with Nussbaum's above suggests that orchestral musicians' creativity resembles the creativity of jazz musicians; the individual orchestral musician should exercise personal expression, be within or close to the musical frameworks required, and adapt to the context. For a musician it is possible that a sign of expertise is to know the limits of the musical language game (Wittgenstein, 1953/2009, 1980/1984; 1969/1979). To be able to use a wide spectrum of possible interpretations and to be able to play close to the limit of acceptable risk may enhance the personal interpretation. Dobson and Gaunt (2013) describe risk-taking as important in high-quality performances for orchestral musicians. The musicians can thus challenge the prevailing structures for orchestral performance. Clarke (2012) claims that, as well as being dependent on their own personal knowledge, musicians are constantly working at intersections of materials and practice.

> Creativity in performance takes place at the interface between socially constructed musical materials and performance practices, the possibilities and constraints of the human bodies and instruments with which they interact, and the perceptual, motor, and cognitive skills of individual performers. (Clarke, 2012, p. 27)

Clarke (2012) explains that musical expression, as a form of creativity, is often described as dependent on how the score is interpreted. Expression is related to how the norms, for example, of score interpretation, are treated. Creative expression often means that the interpretation must be different from the norm, but not so far from the norm that

it becomes incomprehensible. However, norms in performance practice are always changing.

There is a difference between expertise and eminence, say Ericsson, Krampe and Tesch-Römer (1993). The expert has to master techniques and knowledge that exist but the eminent performer must be able to master techniques and knowledge comparable to other eminent performers and be able to reach beyond this knowledge in an innovative way. Transitioning from music education that focuses mainly on technical issues to performance that focuses on emotional expressions mediated by music can thus be considered one of the keys to reaching an expert level. Ericsson, Krampe and Tesch-Römer (1993) also claim that the criteria for judging a performance as expert or eminent is constantly changing.

Csíkszentmihályi (1997) presents a model in which he describes an experience he calls *flow*. Flow, an emotional state connected to performing a task, can occur when a performer performs a challenging task that demands high skill. When performing the task all concentration must focus on the task. In the model he presents different experiences for the performer regarding the task's level of challenge and the level of skill of the performer. For example, performing a task with a high level of challenge combined with a too little skill might cause anguish, whereas performing a task with a low level of challenge combined with a high level of skill might cause boredom. The optimal situation is when the level of challenge matches the level of skill of the performer. Csíkszentmihályi (1997) also describes the importance of concentrating, or focusing, on the task and enjoying the challenge and the skill when performing. It might involve being present in performing the task, or losing a sense of time and place due to the demands of the performance. As a skill is developed, more challenging tasks are required to reach the state of flow.

The orchestra is a hierarchical institution (Liljeholm Johansson, 2010). It is hierarchical in its structure with different types of responsibilities and authority according to the position held. The orchestra has a set form with variations that depend mostly on the repertoire to be played. But even if there is an organizational hierarchy it is not musically hierarchical in the same manner, since each part is important for the final musical outcome. However, there are differences in the number of musicians who play a part and thus a difference in the responsibility of the individual musicians. The responsibility is not necessarily less for the different positions but involve different demands (Liljeholm Johansson, 2010). A tutti violinist, for example, is responsible for using the same bowings as the concertmaster and for following the concertmaster in situations such as when playing in unison, whereas a principal flutist must meet other requirements. This means an individual musician's interpretive space is dependent upon the position he or she holds in the orchestra. Cottrell (2004) writes about the differences in musical roles that: '*You have to not so much subsume it, but you have to submerge it, you have to craft it into different shapes*' (p. 44).

3.5 Summary

The theoretical framework of this study is based upon an epistemological belief that all knowledge cannot be verbalized, and a belief that the body as well as the mind has a part in knowledge creation. Knowledge is considered to be personal. It deals with the particular as an example, and therefore cannot be proven or repeated with scientific experiments. A common contemporary position is that all knowledge is practical, since it involves a personal understanding and personal acquisition of knowledge. Knowledge and learning are seen as a process, in which it is not always possible to predict what is going to be used, when it is going to be used and how it is going to be used. How this knowledge can be understood and expressed depends on the context, both as a pre-understanding and as the language games in which people participate. Knowledge is shown in action. Here Janik's (1996) definition can be applied specifying that practical knowledge is action, and tacit knowledge is the knowledge that allows us to perform the action.

The models for different types of knowledge, particularly Aristotle's (1995b) model and Johannessen's (1999) model, present the different aspects of knowledge but not an absolute separation of different types of knowledge. In all knowledge all various elements are present to different degrees. Johannessen's model with propositional knowledge – the knowledge that can be communicated as scientific truth, skill – to be able to perform something, knowledge by familiarity – to have experience, and judgement – to implement and assess how something can be used, is useful for understanding musical knowledge. Because knowledge is mediated primarily between individuals, personal learning is fundamental. Learning consists of learning a practice in the language game that one is part of, however the language game or practice should not be seen as fixed but as changing (Wittgenstein, 1969/1979). Central to learning is the relationship between the example and the particular case, evaluated by experience and judgement.

Knowledge of music can be seen as both individual and collective. Collective knowledge, practiced by individuals, is necessary in order to function in the musicians' language game. Being a musician is a multi-faceted profession, since it is exercised individually and in interaction with others. The profession demands a high degree of individual knowledge, but this knowledge requires that others have the same kind of knowledge. Orchestral musicians' opportunities for expressing themselves musically can be restricted by the orchestral structure. However, all musical works must be interpreted.

This chapter has addressed theoretical and practical perspectives of knowledge and learning, with a focus on the specific challenges of orchestral playing in which the individual musician and the orchestral collective form a seemingly contradictory polarity. The final focus has been on aspects that restrict the musician and aspects that make musical freedom possible.

Chapter 4.
Method

This chapter deals with methodological concerns. The aim of the chapter is to create a transparent description of procedures and methodological choices employed in the study. It also aims to connect methodological literature with theory. A consequence of the hermeneutical approach is that not only methodological issues related to the data such as analysis and categorization of the data are presented, but also issues related to the study and thesis as a whole. The hermeneutical approach in this study is grounded in methodological concerns. A consequence of this choice is that most of the literature referred to in the chapter is methodological literature and not original sources on hermeneutics.

4.1 Choosing methods

The choice of interview methods as a basis for this study was founded on Janik's (1996) views about using personal stories from professional knowledge for research on professional knowledge. Interviews feature in research methods in music education as developed at the Malmö Academy of Music where interview studies have been used to investigate professional practice (Johansson, 2008; Ljungar-Chapelon, 2008).

The data in this study is based on experience transmitted through narration. Barrett and Stauffer (2012) describe the functions of experience and narrative in narrative inquiry:

> Experience, then, is fundamental in narrative inquiry. Absent experience, there is no story. Moreover, absent communicating of experience through story or gesture or music or other means, there is no narrative. Thus, the ontology of experience in narrative inquiry is relational – it requires both teller and listener (whether real or imagined). "Relational" in the ontology of experience is crucial to narrative inquirers and inextricable from epistemology, because the nature of the relationship between teller and listener – who teller and listener are and what they know of or assume about each other or who they assume each other to be – has something to do with how experience is told and retold, interpreted and reinterpreted. (Barrett & Stauffer, 2012, p. 7)

The role of the researcher and the relationship between the researcher and the informants is central to this description. This relationship covers not only the actual gathering of data but the research process as a whole. The view they present of experience as lived and embodied and as a basis for knowledge offers a starting point for the interviews in this study.

It was important for the study that the informants and I have a shared professional knowledge. In this study, the informants and I share the lived and embodied experience of harp playing and of orchestral playing. It would not have been possible to use interviews in the manner I have if I had not shared this knowledge. As an example of shared knowledge, when an informant referred to marking a part I knew what he or she was referring to, and did not have to ask for an explanation of what it was or how to do it but could discuss the details. Whereas if I interviewed, for example, an oboe player, I would not know the specifics of marking parts because I cannot bring the same level of background professional knowledge to the discussion. Thus interviewing in an area where I have deep knowledge will raise different questions and issues. El Gaidi (2007) claims that a researcher who does not have knowledge within a specific practice might see what has become invisible within the practice, but he or she might not be able to ask the questions that are relevant for an audience who is familiar with the practice. A researcher with knowledge from within the practice can judge a practice differently. As well as being able to judge the skilfulness within the practice, according to El Gaidi, he or she is able to identify what is missing – an ability to relate the practice to the professional tradition and to judge where it differs. Having knowledge about a topic does not, however, automatically make the research more interesting or generate better research.

In this study I chose to use my existing knowledge of the field as a methodological tool. There is an established practice of musicians examining topics close to their own practice in musicology, music education and artistic research (see 1.2.3).

Barrett and Stauffer (2012) claim that method when doing narrative inquiry is important, but they avoid setting rules or limitations. Their focus is on '*how to be* in narrative inquiry rather than *how to do* narrative' (p. 8). This points to the position of the inquirer rather than the methods of conducting the research. However, it does not mean that methods are not important.

The interviews in this study can be regarded as what Kvale and Brinkmann (2009) call 'interviews with elites' (p. 147). Even though those they describe as elite are mainly associated with powerful positions some aspects are relevant to this study.

> The interviewer should be knowledgeable about the topic of concern and master the technical language, as well as be familiar with the social situation and biography with the interviewee. An interviewer demonstrating that he or she has a sound knowledge of the interview topic will gain respect and be able to achieve an extent of symmetry in the interview relationship. (Kvale & Brinkmann, 2009, p. 147)

Kvale and Brinkmann stress the importance of pre-understanding as a prerequisite in this genre of interviewing. It is possible that my pre-understanding as a harpist with orchestral experience might have given me access to kinds of information that another interviewer with no knowledge of the harp or of orchestral playing would not have accessed. Kvale and Brinkmann (2009) consider preparation to be important in interviews with elites. With my extensive previous experience and knowledge, much of my preparation for interviews was already completed. However, some of the material presented in this thesis, such as the previous research presented in Chapter 1, the background material presented in Chapter 2, and the theoretical perspective presented in Chapter 3 can be considered to be preparation on the topic. According to Brodsky (2006), getting access to orchestral culture is one of the key challenges in doing research about orchestral practice, and having experience as an orchestral musician may facilitate getting access. Pre-understanding as a tool for interpretation and analysis is described in 4.3.

Another starting point for this study was Bresler and Stake's (1992) view of typical characteristics of a qualitative study. Typical characteristics, as they describe them, are that a qualitative study is descriptive and interpreted, and that the interview material is presented by means of the researcher's descriptions and interpretations but also through quotations from the interviewees. It is empathic, in the sense that the researcher's understanding and description of the material and the interviewee's intentions should be the basis for empathy and for the interpretation. A qualitative study, as described by Bresler and Stake (1992), is case-oriented and holistic, where an interview may be considered as a case. This case must be anchored in the particular field. Bresler and Stake (1992) describe the interview as an appropriate qualitative method for music educational research, particularly when the researcher seeks deeper knowledge about a topic. Interviews with a low degree of structure provide an appropriate form for following the informant's narrative structure and sense of what is essential.

This method, however, is time-consuming compared to more structured interview forms. In this study four fairly short interviews have been conducted. This may not correspond to Bresler and Stake's (1992) notion about in-depth interviews, however the issue must be evaluated in light of the context in which the interviews were conducted. Here I emphasize the common body of knowledge and the lived and embodied experience that the informants and I share. As musicians, we shared an in-depth interest in and knowledge of issues we discussed. In Liljeholm Johansson's (2010) study she describes musicians as very task-focused. In the interviews, I as a researcher, and the informants as co-researchers, as musicians, were very task-focused. During the interviews we immediately found common reference points. Of course, these would have been different if, for example, we had known each other before, studied with the same teacher, or worked in the same orchestras. Thus, the criteria for choosing informants were as important as the methodological choice of the interview form. The research reported in this study is related to what Ginsburg (2014) calls practice-based research. She finds it relevant to distinguish between artistic research and practice-based

research. Practice-based research does not require an artistic product as a result. Thus the present study can be regarded as practice-based research, since, while it is based on my own experiences of a practice, I do not primarily investigate my own practice. My reflections on performing music, as described in the Prelude to the thesis, were not used as data in the study.

There must always be a basis for the choices made in a study. A selection entails both choosing something and deciding what not to choose. Thurén (2005) asserts that a choice must be assessed from the perspective in which it is made. He argues that there are various reasons for distorted or misleading selection. One reason is practical; that it is not possible to obtain a good selection for a variety of reasons. Another reason may be deliberate distortion from the researcher, i.e. forgery of selection. Thurén's (2005) point is that the selection perspective should be presented in order to be evaluated.

One of the fundamental ethical considerations for the choice of informants in this study was that I should not have any relationship with them as a musician, nor with the orchestras they work in. It was important that relationships with informants could not be exploited in order to expand my freelance practice. I have not worked with any of the musicians in the study nor with any of the orchestras. I am unlikely to work with these musicians in the future. Neither will I work with the orchestras they work in since they are not a part of my freelance market, which consists mainly of the Nordic countries. The underlying possibility of freelance work for me as a harpist was never present in the interviews, even if the aim of the research is related to my role as musician. I had no previous personal contact with the informants before contacting them for the study, although I had heard one of the informants at a concert, and possibly some of the others.

The number of informants is a major concern for any study. Kvale and Brinkmann (2009) emphasize that the number of interview subjects is dependent on the purpose of the study. It is possible that having too few interview subjects will make it difficult to generalize, while too many subjects make good analysis difficult. Kvale and Brinkmann (2009) note that the number of interviews in a qualitative interview study tends to be between 5 and 25. They remark: 'A general impression from current interview studies is that many would have profited from having fewer interviews in the study, and instead having taken more time to prepare the interviews and to analyze them' (Kvale & Brinkmann, 2009, p. 113).

One major consideration when choosing the number of informants for this study was that there should be at least three different harpists and institutions, thus avoiding the comparisons between two informants or institutions. To have only two informants could easily create an uneven balance. To have too many informants could create a level of generalization in which the voices of the informants would be blurred. The aim was to keep the focus on the individuals and to obtain as rich material as possible from the interviews conducted. A better description of the professional life-world of the informants as orchestral musicians could then be obtained since the informants could

be regarded as individuals. Similar considerations were made by Ljungar-Chapelon (2008) who chose to have two informants in his thesis in music education. My research choices were influenced by Aristotle's idea that the particular has precedence over the general (Nussbaum, 1990), connecting the methodology to the chosen theoretical perspective. In this study four informants participate from three different institutions, and the focus can shift between the three different institutions or between the four different musicians. When the analysis and categorisation of the four interviews were done, no categories consisted only of data from one interview. If that had been the case at least one more interview would have been conducted. In a qualitative study it is inherently difficult to assess whether the number of informants or interviews is sufficient.

The aim of the study was not to create generalizations from the research questions but to consciously focus on the informants' statements that are dependent on when, how, where and by whom the questions were asked. However, I was influenced by Cassirer's (1944/1972) idea that we understand the world by creating structures of unique cases. Generalization was never the main aim when choosing informants, although generalization, understood as structures, is a way of understanding the world. There is an obvious tension between the aim of research as creation of structures and the aim of understanding the unique case. The interviews can be seen as unique cases but the contribution to knowledge is the created structures. On the other hand these structures cannot be seen as a priori structures but as constitutive since they are dependent on the choices of methods and theory and on the individual who is doing the research.

Lincoln and Guba (1985) assert that context-free generalizations are not possible, or meaningful, within all kinds of research. They suggest that *transferability* is important. This transfer is based on how the researcher presents material from the research, and how the reader understands and relates it to his or her prior understanding. This idea is similar to Johannessen's (1999/2002; 3.2.3) analogical thinking.

To choose informants I needed criteria that would enable me to fulfil the aim of the study. The aim was to focus on issues of knowledge affected by the frames musicians have and the freedom musicians have within these frames (see 1.3.2). The study was also aligned with research on expertise and learning as a professional. Therefore I chose to study experienced orchestral musicians with positions in renowned orchestras. The aim was not to study the development of the orchestra, therefore established orchestras were chosen. Since there are different traditions in different orchestras I chose to interview harpists from different geographical areas, different kinds of orchestras, and different positions. The main objective was never to compare the different orchestras or the different harpists but to have the possibility of different perspectives on the body of orchestral harpists' knowledge. I chose the Bolshoi Orchestra, a Russian orchestra mainly playing ballet and opera, the London Symphony Orchestra, mainly playing orchestral repertoire but also making commercial recordings, and the Orchestre Philharmonique de Radio France, mainly playing orchestral repertoire. It should be noted that the Bolshoi orchestra and the Orchestre Philharmonique de Radio France

have a different status in their countries, and internationally, than the London Symphony Orchestra. Thus, the organizational and economic structures of the orchestras provide somewhat different working environments for the harpists.

Having formulated selection criteria, I discussed suitable candidates and orchestras with colleagues from different geographical areas in an attempt to try to avoid my own biases and to widen my perspective. As described below, some suggestions also came while interviewing, even though I did not ask for suggestions during the interviews. Some suitable candidates were contacted but could not participate due to practical problems such as our inability to find a suitable time to meet or due to my limited resources. The participants from these three institutions fulfilled the criteria required. In the thesis and study reports they are identified with their real names and institutions.

As described below, these four interviews took place in three different settings, and no attempt was made to make them similar or compatible. Some differences which were not set as criteria in the beginning of the process emerged during the process of choosing informants. One was the issue of the gender of the harpists interviewed (see 4.6). Another was differences in career stage, in which the four interviewees had different positions: early mid-career, late mid-career, close to retirement and retired.

4.2 The interviews

The four interviews were conducted in the order presented below; first two interviews in Moscow, then one in London, and finally one in Paris.

From the *Bolshoi Orchestra*, which is primarily associated with ballet repertoire, I interviewed Natalia Shameyeva and Anna Levina. Natalia Shameyeva has retired from her post as principal harpist, and Anna Levina presently holds the post. They have also worked as colleagues at the Bolshoi. At the Bolshoi six harpists hold positions. When the interview with Anna Levina took place Natalia Shameyeva was present. The interviews took place in my hotel room.

From the *London Symphony Orchestra* I interviewed Karen Vaughan who is the co-principal; i.e. she plays second harp when the principal harp is there and first when he is not there. The LSO is a freelance orchestra: the musicians are members of the orchestra but only play and get paid if they are required in the production. It is a symphony orchestra that also does numerous commercial recordings. There are two members in the harp section. Karen Vaughan is also Head of the Harp Department at the Royal Academy of Music. The interview took place in her home.

From *Orchestre Philharmonique de Radio France* I interviewed Nicolas Tulliez who is the principal harpist. There are two members in the harp section, and they have positions of first and second harp. The interview took place in his home.

The interviews were recorded with a video camera and the sound was also recorded on a computer. The computer recordings were used when transcribing due to my personal preference for listening over viewing. The interviews were between 1 hour (Nicolas Tulliez and Anna Levina) and 1 hour and 45 minutes (Natalia Shameyeva and Karen Vaughan). In total the recorded material was approximately five and a half hours. I also made some notes of issues that were not recorded. The reason for having two recordings was to have a backup if something went wrong when recording. I also wanted the option of using different kinds of recordings if necessary during analysis. I did not set time limits for the interviews; durations depended on the dynamics of the interviews.

The first contact with the informants was by e-mail. In the e-mail I briefly described the study; all were informed that the topic was orchestral playing from a harpist's perspective. I adopted a low-structure approach to interviewing. Rather than using pre-constructed questions, I prepared basic notes about areas to cover. For example, before the interview with Nicolas Tulliez I had eight lines with words and sentences like: conductor, difference solo-orchestra, 1st-2nd, are there special difficulties. These keywords were used to give direction if the interviewee and I needed a something to start a discussion from. In the interview, questions that might have emerged from the keywords were asked, but these questions might also have been questions that followed on from the statements by the informant.

As an example of how interview questions were formulated, this is how I used the keyword 'special difficulties' in the interview with Nicolas Tulliez:

> LL: When playing in the orchestra what do you think are the special difficulties for harpists, are there special difficulties?
>
> NT: To be heard (laughter). Tuning, that is the main problem because most orchestras go up during the concert unless it's a very, very, high-class orchestra.

Another example from the same interview illustrates how I used the keywords 'difference solo-orchestra':

> LL: What do you think is the biggest difference between playing solo and playing in an orchestra?
>
> NT: It might sound funny but to me it is more stressful to play in the orchestra than to play solo. If I fuck up while I play a concerto then its my own problem. If I do it in an orchestra I mess up the work of a hundred people, so for me the stress is more important. Like the blame from all of the orchestra, if I do a concerto they blame it on me. Most people think it is easier to play in the orchestra but for me it is the reverse because it is a lesson of humility because you are not very important most of the time, you are not like the big ego in front, you are just a little harp there you are not a solo violin. But at the same time you are important and usually nothing goes wrong. But when it goes wrong it's really wrong because if a pedal is wrong it's not like a little out of tune, if the flute

goes a quarter tone lower you know okay nobody cares, but if we play c sharp instead of c natural it's a huge mistake: so it's either or not wrong there is no little mistake on the harp basically.

In the interview I asked a question about differences between the first harp and the second harp. However, since the informant mentioned first and second harp earlier in the interview it is not clear if I, as an interviewer, asked a question that referred to something the informant had said earlier or if the question was triggered by a keyword from my notes. No questions about the conductor were initially asked by me since the topic was initiated by the interviewee. It emerged in the beginning of the interview:

LL: If you listen to a harpist in orchestra what do you listen for if it is a really good harpist?

NT: The sound, for me that is the most important thing: the sound, the quality, the tone. Of course it has to be the right note at the right place that is the minimum but then it is only the sound. Projection. Quality.

LL: And projection it's like loudness?

NT: Not necessarily loud, but when it needs to be heard, to be there. But not too much overplay it, just there, but it depends on the harpist and most of the time on the conductors. A good orchestra player needs to know what is going on in the orchestra. I don't know what you are asking. The sound.

LL: You say it depends on the conductor, what do you mean?

NT: Some conductors are really interested in the harp so they can make other instruments play softer so we can produce a sound we think is good for the harp.

In this example I asked a follow-up question about the conductor. However, it could also have been possible, for example, to continue with questions regarding 'what is going on in the orchestra' which might refer to ensemble playing and listening.

Some topics emerged from previous interviews and I was aware of the fact that different musicians could have different foci. I was open to the fact that the interview could lead in various directions and my decision was that I would accept them as long as my informant kept basically to the subject and was engaged when talking about it. All four interviews covered the same areas, but to a differing degrees or depth. Inevitably this manner of interviewing makes the interviews dependent on each other since the interviewer knows what topics were discussed in previous interviews. Before conducting the interviews in London and Paris I also had made a rough categorization and analysis of the two first interviews, something that might have influenced the subsequent interviews. For example, in the interviews in London and Paris I asked what the informants listened for when hearing a good harpist in an orchestra, a question that I asked in the first interview with Natalia Shameyeva. The question had not been pre-

formulated before the interview but was formulated when conducting the first interview:

> LL: What do you listen to when you hear orchestra harpists, what do you like, the excellence?
>
> NS: You know that harpists listen to the orchestra, to any orchestra of course, how to say, try to understand what the harpist is doing. And of course they prefer to hear clear and nice tone and big enough, that is not covered with other instruments.

When analysing the interview I noted that after this question the interview became more intense. In the interview with Karen Vaughan I asked a similar question:

> LL: When you listen to a harpist in orchestra, what do you listen for? If you think this is a very good orchestra harpist.
>
> KV: Well the main thing is sound of course, and whether they have a big enough sound to come through in an orchestra, and how aware they are of everything around them.
>
> LL: and how do you notice…
>
> KV: Well, you mean if I was in the audience listening to an orchestra harpist whether I would think them good or not? Well obviously when the ensemble is good, and the tuning is very important, that you have to adjust the tuning according to which instruments you are playing with.

In this interview, the question intensified the interview focus even though we had talked about orchestral playing before the question was asked. No material before this question was asked is used in Chapter 5. In the interview with Nicolas Tulliez cited above, I started the interview with a similar question. I did not plan to ask the question but it seemed like a natural point of departure. It is probable that this question gave the informants the opportunity to discuss what they considered excellence to be without talking about their own work.

Sometimes in the interviews a more collegial dialogue emerged, as in the following conversation between Karen Vaughan and myself:

> KV: Yes, a lot of these things are available online, they were talking about setting up some sort of forum where people could discuss what markings, what they do in certain places…
>
> LL: I think they have some kind of forum where mistakes in parts… I've got a file from that… That is interesting too
>
> KV: Yes, it is interesting yes, absolutely there's a lot of mistakes in parts
>
> LL: French parts

KV: Yes especially French parts you know…things like that, I mean… obviously if you have played in orchestras as long as me you can tell your students what's wrong in a part, but it would be useful to have some sort of forum of that. I can't remember, I'm sure I heard about this as well, mistakes in parts, I think it was discussed in Vancouver, did you go there?

LL: No, I didn't go there

KV: I'm going to Sydney 2014, and then the next one is in Hong Kong

LL: They are keeping them far away…

KV: Yes I know, it's too far away, we need to come back to Europe but somebody has to want to do it. It's a lot of work.

I mean… we talk among ourselves, with my colleagues when we've got a good fingering for something, because you don't remember. If you have a brilliant idea about something you rehearsed you need to write it down otherwise you forget it next time, and so it's quite interesting to compare these things. I think the students today are very lucky that they've got access to orchestral classes and their teacher's markings. I didn't have any of that I just had to do it from scratch from the beginning, and it's hours of work isn't it?

This conversation was interwoven in Karen Vaughan's answer to my question about contact with colleagues. We were referring to the World Harp Congress.

How the interviews were conducted was also affected by how and in what language we communicated, and the different environments. All interviews were conducted in English, but only one participant had English as a first language. The issue of language is a major concern in interviews, naturally all involved would feel more comfortable speaking their first languages. It is possible that cultural differences between us affected the interviews (Kvale & Brinkmann, 2009). It is also possible that the interviews were affected by the different settings. Due to practical reasons two of the interviews were conducted in a hotel room and two in the interviewees' homes. It is possible that the interviewees felt more comfortable being interviewed in their homes. At least I, as an interviewer, felt more comfortable interviewing in the homes of the interviewees. It may have been due to conducting the interviews in rooms where there were harps, which made the professional focus easier. To invite a stranger to your home, even if we have had previous e-mail contact, is also a sign of trust. I found it more difficult to conduct an interview in a room, such as a hotel room, that was not designed for meeting people.

An aim of the study is to provide a description of orchestral practice, and of issues of knowledge within this practice as expressed in the interviews. This includes that what is expressed as everyday practice of orchestral playing as well as challenges to the practice. Wittgenstein (1969/1979) remarks that is it easier to assess the abnormal situation than the normal situation. When focusing on the abnormal situation the

normal circumstances will be visible since they are related to each other. For example, the description of sight-reading a cadenza in a performance as in 5.4.4 is an abnormal situation, but through this description the normal circumstances are understood. This emphasizes aspects of the profession that are highlighted when the situation is abnormal.

When conducting the interviews I chose not to probe further into issues of shortcomings, failures or unpleasant situations. On two occasions in two different interviews the informants were encouraged with follow-up questions to describe situations that might have been seen as unpleasant, however none of the informants did. This may be regarded as an ethical issue, in which the informants should have the right to choose what they want to convey. It can also be seen as a choice where my intention was not to present anecdotes of unpleasant situations. However, even if few anecdotes of this kind are presented, the material itself reveals what is problematic in the profession. If the informants describe issues as problematic, it is probable that these issues have been experienced as problematic on at least one occasion. For example, all informants described placement in the orchestra as a central issue due to problems of hearing and seeing properly. The anecdote in which the six harps were not placed in the pit (see 5.2.1), describes a problem with placement; it might be interpreted as failure of the conductor, or failure of the harpists who did not manage to play well enough from this position. However, it might not be relevant to find anyone to blame in this situation. When the conductor tried a new position for the harps, the harpists were not able to perform well enough, and consequently another placement was required. This is part of normal orchestral work. But being unable to play well enough because the line of sight is obscured is a failure for any musician, since one's goal is to perform well. Cottrell (2004) notes that in his study of musicians in London there was material he did not use because he was involved too closely. However, since I have chosen a different methodological and theoretical approach than Cottrell, in that I have not studied colleagues I work with or examined my own practice, I am not personally involved in the material in my study. But with Cottrell's study in mind it could also be fruitful to study how music students and musicians learn their profession and expand their knowledge from professional experiences that can be seen as failures or shortcomings. This would also be in line with Janik's (1996) idea that reflection occurs when the usual routine does not work (see 3.1.3).

I conducted four interviews with harpists from three orchestras. I was offered an interview with Anna Levina shortly before the interview with Natalia Shameyeva, as described below (see 4.2.1). Since I aimed to treat all interviews as independent cases I did not find it problematic to have an uneven balance between institutions. Since Natalia Shameyeva was also present when I conducted the interview with Anna Levina there were occasions in which I was able to take a back seat as interviewer as they engaged in collegial dialogue, yielding valuable insights. Barone (2001) offers examples of different interviewing methods and ways of presentation which gave me a new perspective on qualitative research. His approach to presenting interview data, not as

detached data, but maintaining individuals' relationships to their contexts, opened up possibilities for embracing differences in methods and in presentation.

4.2.1 In Moscow

Natalia Shameyeva was the first harpist I contacted; she immediately consented to be interviewed. In 1993 I had heard her, with Vera Dulova, talk about and play Russian ballet cadenzas and variations at the World Harp Congress in Copenhagen. Vera Dulova was an internationally renowned legendary teacher and harpist. To hear her play was an extraordinary opportunity at the time. Although Dulova was the focus of the 1993 concert, when considering candidates for my study, I immediately thought of Natalia Shameyeva, partly due to her knowledge in the field as presented at the Congress, and partly due to her experience as an orchestral harpist at the Bolshoi. At the time I contacted her I knew she had written a thesis on Russian harp music (Shameyeva, 1994) although I had not yet read it. I also knew that she had retired from her position at the Bolshoi.

Once settled in my hotel in central Moscow, I called Natalia Shameyeva and we decided to meet at my hotel which, by coincidence, was close to the Bolshoi theatre. She also offered me an interview with her friend and colleague Anna Levina – presently a first harpist at the Bolshoi – since, as she said, I travelled so far for the interview. Of course I gladly accepted this opportunity. I waited in the lobby at my hotel, and when Natalia entered I immediately recognized her. My first impression of her was her intensity: of her gaze, her movement, and her speech. She was smaller than I remembered her from the stage, as is often the case, but she radiated even more energy than on stage. We considered doing the interview in the restaurant close to the lobby but since it proved too noisy for my recording devices we conducted the interview in my hotel room. At the beginning of the interview we were not at ease speaking English but we became more comfortable during the interview even though we occasionally misinterpreted each other. She had been considering some of the research issues beforehand even though I did not pose any specific questions either before the interview or in the interview.

Anna Levina arrived two hours before the evening performance started at the Bolshoi. Natalia and I met her at the lobby and we all went to my room. As Anna sat down in a chair in the room, I sensed that she had a great personal presence and that she also had a strong and clear voice. Anna also had the capacity of a storyteller; her responses in the interview had shape and structure, and even when she was talking about everyday practice it became a performance. Natalia was present during the interview with Anna. She sat on the table next to the recording equipment or walked around in the room. Sometimes she joined the conversation with Anna with short remarks and sometimes a collegial dialogue between Anna and Natalia occurred. They had been colleagues at the Bolshoi and were friends, which became obvious during the interview. They also shared

the experience of being Russian-schooled and of being students of Vera Dulova. Madame Dulova was not only a prominent teacher but also a predecessor at the Bolshoi. Her influence as a harpist and as a professional orchestral musician was referred to several times during the interviews. An hour before the evenings' performance of *Nabucco*, Anna left the hotel to be in time to tune her harp. Natalia left at the same time.

In a way, in these interviews I had been the audience. I recalled my experiences as a student of listening to professional musicians discussing their work.

4.2.2 In London

I contacted Karen Vaughan after I had been to Moscow. Natalia Shameyeva suggested that through Karen I could find out where to buy the English translation of her thesis. Karen Vaughan was a harpist I considered suitable for an interview since she was working in a British orchestra, working as a co-principal, and was Head of the Harp Department at the Royal Academy of Music. Her geographical location was different from the Russian harpists, her position in an orchestra different from the Russian harpists and it would be possible to obtain an educational perspective on orchestral playing.

The interview took place in her home in the outskirts of London, and she picked me up at the train station and drove me to her house by car. She gave the impression of being kind, and also very frank and straightforward. It was easy to picture her as a teacher. She lived in a small house with her cat who sometimes came in to us and meowed during the interview. There were harps in the living room, which I expected from a harpist. She offered me coffee and chocolates during the interview. Since Karen spoke her first language in the interview she could speak very freely. I also noticed that my own English became better during the interview as it does when speaking with native speakers. Karen said that she was at the end of her career, as she would soon retire. Being at this career stage made it possible for her to look back and to be very straightforward in stating her opinions and expressing her experiences. After the interview she drove me back to the railway station.

I felt very comfortable with this discussion in which we could connect to each other's work as teachers as well as connecting as orchestral musicians.

4.2.3 In Paris

Karen Vaughan suggested I interview Nicolas Tulliez, whom she regarded as a good orchestral harpist. I considered him a good complement to the other harpists interviewed. I had decided I needed a French participant since France has a strong harp tradition. Nicolas was a principal harpist in his early mid-career, thus in a different

position than the other musicians interviewed. He was also male, and since I had interviewed three women, although this issue did not feature strongly in my selection process, it could provide a contrast to the other interviews.

We met at a café in Paris and he treated me to a cup of coffee. Since the environment at the café was too noisy for my recording devices we went to his apartment that was close by. To get to his apartment we had to cross the yard and walk up winding stairs. I was amazed a harpist could live in such an impractical environment for carrying a harp, although I knew he had a steady job and did not have to carry his harp that often. The apartment was small with a sleeping loft but very light and airy, and it was easy to understand why he had chosen to live there even if it was impractical for a harpist. Yet there was a harp standing in the centre of the apartment; on the music stand there was a piece of contemporary music with lots of markings. Nicolas immediately gave the impression of being a very warm and humorous person, and when listening to the interview recording afterwards I realized that sometimes our conversations were drowned in laughter, making it impossible to transcribe some of the words said. He was very open-hearted about his work and experiences.

After the interview we had a cup of coffee and talked about work-related topics that were not directly associated with the interview. Then I left to take the metro to Montmartre.

4.3 Analysis and interpretation

Pre-understanding is a fundamental hermeneutical concern. I am a harpist myself, thus some of the pre-understanding I bring to the interviews is self-evident. I know the pieces, the parts, the instrument, and the people we discussed during the interviews. For example, knowing why it is not possible to play the chords with a mediator, or pick, in Mahler's *6th Symphony*, as mentioned by one of the informants (see 5.1.1) is part of my pre-understanding as a harpist with experience of orchestral playing. I am also aware of the background to such problems and how to solve them when playing. This was a part of the understanding between the interviewees and me. I have knowledge about the issues they were referring to. In my first contact with the interviewees I presented myself as a musician and a PhD candidate. I also positioned myself in an educational context as a musician; i.e. where I studied, with whom I studied and in what tradition. The interviewees therefore had pre-understandings of my knowledge of the field.

Although I have pre-understanding of the field, I have chosen to do a study that is not about my own primary practice, and my pre-understanding for this study is limited. The differences between the interviewees and myself should not be underestimated, especially the fact that I never had a steady job in an orchestra. Having a steady job is

different from being a freelance musician. Having a position means that you play regularly with the same orchestra, with the same colleagues, play in the same venue, and use the same instrument. This creates a collegial and musical continuity that a freelance musician does not experience. The time these informants have spent playing in orchestras exceeds the time I have spent playing in orchestras. My interest, and thus that of the study, is in going beyond my experienced knowledge and pre-understanding, thus I chose to interview musicians in internationally high-ranked orchestras. The aim of the study was to widen my knowledge rather than to confirm what I already knew; I had no intention of researching my own experience and practice. When interpreting the findings from the interviews I made an effort not to add my own experiences to what the informants stated. However, it is not possible to conduct interviews that are based on pre-understandings without influencing the interviews.

An interview transcription is a construction in which a spoken conversation becomes a written text (Kvale & Brinkmann, 2009). The transcription cannot be seen as the same as the spoken word; rather, it is a first step of interpretation. The transcriptions of the interviews in this study contained only verbal statements, for example, no gestures were notated. Laughter was noted. In the first transcription of the interviews I made no corrections to the language but made an effort to keep as much as possible of the spoken language. By this kind of transcription I could hear the voices of the informants in my inner ear when reading the text and keep the focus not only on *what* was said but *how* it was said. Mostly, the text was transcribed as a flow, as in James Joyce's (1922/1993) *Ulysses*. In instances where sentences were perceived as being completed, I used a capital letter at the beginning of the sentence and a full stop at the end. In cases where sentences were not completed an ellipsis, …, were used. When the informant stressed a word it was written in italics. When an informant clearly showed that it was a quote, for example, with a different tone of voice, it was noted in quotes. A quote that started as a quote but ended up as a reflection was noted as a quote only in the beginning. When what was said was not audible a question mark was used.

The interpretation of the interviews has been inspired by a hermeneutic approach. One of the key points was to take into account was my prior understanding, since the interviewees and I were aware of my knowledge in the field, and it was an unspoken assumption in the interview situation. This pre-understanding has been essential for analysis and interpretation of the interviews. I have used my pre-understanding during analysis where I felt it was relevant to explain the underlying background to the statements that informants gave. Since in Chapter 5 I aimed to provide a descriptive analysis of the interviews, I emphasized interpreting and explaining the interviewees' statements. I have chosen to keep myself open to new propositions from the interviews in the manner Ödman (2007) describes. He advises that there should be an opportunity in an interpretation for the interpreter to find new information and knowledge, and to be able to change her or his understanding.

For Ödman (2007) pre-understanding and interpretation are related. Pre-understanding enables direct understanding or decision-making. When one's pre-

understanding is not enough, or there is something that does not work 'as it usually does' the need to interpret arises. One needs also to interpret when one does not understand. Interpretation requires that the interpreter choose a perspective. In this study, my perspective was determined by the main aim of developing greater understanding of the informants' knowledge of professional orchestral harp playing and of corresponding educational issues and processes.

Ödman (2007) argues that interpretation can both reveal and assign meaning, as he demonstrates regarding the time aspect of the interpretation process. When it reveals meaning it is linked to the past, to what is already known. The assigned meaning is linked to the future, proposing the possibility of something. The interpretative act is always subjective, and interpretation is always from a chosen perspective. This means that there are many possible angles from which to view a phenomenon and that an interpretation involves a choice.

Another aspect of interpretation is what Ödman (2007) describes as the relationship between part and whole in the material, associated with the level of abstraction. He illustrates part-whole thinking with the metaphor of a puzzle. To consider how the small separate pieces fit together into larger units and to see how they fit with other individual pieces you also have to take into account what the whole puzzle should look like. In this analysis process the interpreter moves back and forth between part and whole. The metaphor does not transfer completely to hermeneutic work, since there is no ready-made goal as there is with as a jigsaw puzzle.

The oscillating between part and whole in hermeneutics is called the *hermeneutic circle* (Ödman, 2007). An extended metaphor describing how the process works is the *hermeneutical spiral*, which demonstrates that these processes are without end. In this model, the parts and the whole change constantly in the process. Alvesson and Sköldberg (2008) observe that the concept of the hermeneutic circle can be used in several ways in hermeneutics. The original circle indicates moving between part and whole. Alvesson and Sköldberg (2008) also describe a hermeneutic circle that moves between pre-understanding and understanding. The third variation they present is the oscillation between explanation and understanding, which they attribute to Ricoeur. These concepts of pre-understanding, understanding, explanation, part and whole play important roles in hermeneutics and have all been important in my analysis. As a researcher, I make no commitment to a specific branch of hermeneutics but rather to the use of a broad approach.

Commuting between part and whole has been especially important in the process of analysing the interviews. When interpreting interview material, special attention was given to what Alvesson and Sköldberg (2008) refer to as 'Betti's second canon'. This canon addresses the *meaning coherence* or the *principle of totality* and unites the parts to the whole, since the parts must make sense in the unity presented. This also applies in a wider sense to the researcher and the historical context, for example. The understanding of whole and part can be seen at different levels: the context in which

the thesis is written, the thesis itself as a unit, and the chapter in which the interviews are presented as a whole. Each of these different levels should have an inner structure where the parts make sense in relation to the totality.

Moving between pre-understanding and understanding has been especially fruitful when writing the methodology chapter and the chapter on the findings in which I must clarify my own position as a researcher. Moving between explanation and understanding has been particularly important when writing a text addressed to a reader outside the researcher role and interviewees' roles, where lack of common pre-understanding can hinder understanding for those who do not share this knowledge. In my analysis process I also had to take into account that my pre-understanding of this subject probably exceeds that of most readers and researchers within the music education field. When presenting the analysis, I had to be careful that I did not only address those who were already familiar with the issues. I had to be especially careful when describing what I was inclined to regard as normal circumstances or common knowledge in the field to be contrasted with specific knowledge or extreme situations described by the interviewees. If the different poles in these descriptions were not kept in balance, a reader unfamiliar with the issues described would construct a distorted image.

The analysis of the interviews has been made according to what Kvale and Brinkmann (2009) describe as *bricolage* or *ad hoc*. In this approach a variety of analytical techniques may be used depending on the material. The hermeneutic approach formed the basis for the analysis. I read the interview texts and divided them into fragments. These fragments were joined into a new 'whole' under the selected categories described below.

4.4 Categorization

Related to the notion of analysis and interpretation is the notion of categorization. Categorization and analysis have been made with a mixture of methods as Miles and Huberman (1994) describe. Among these methods of categorization and analysis described by Miles and Huberman (1994) I have found the following especially fruitful: noting patterns and themes, clustering, making contrasts/comparisons, partitioning variables, and making conceptual/theoretical coherence.

As I worked with the material, patterns and themes emerged. Some of these were related to the issues that were discussed during the interviews, and some from particular statements by the interviewees. Two kinds of information were important in the categorization process: that stated by the interviewees and that which emerged during my analysis process. The metaphor of 'freedom and frames' was developed during the study. The contrasts between these two concepts highlight the main issue of interpretative space, the musical space in which to perform music (see 1.3.2). The

tension between the individual musician and the orchestral collective also became an important issue. Partitioning variables offered a way to sort statements within the broad categories, and to maintain focus on the different statements instead of attempting to generalize. Clustering was used for different purposes: one was to present the analysed data to the future reader, another was to prepare the data for deeper analysis in relation to the research questions and theoretical framework. The clustering process consisted of sorting statements intuitively as well as analysing the statements and trying to avoid haphazard sorting. This process took over a year and the categorization changed fundamentally during this period. Notions that were regarded as categories early in the process such as the category of *contexts* later became unusable since the notion of contexts pervaded the study: there were contexts of learning, contexts of playing, and musical contexts.

When I had managed to sort all statements under the different categories and no important statements related to the research questions, theoretical framework, or interviews were left out, I decided on the categories. But I also took into account that in a qualitative study this part is subjective and dependent on the researcher. If other researchers analyse the same qualitative data they are very unlikely to select the same categories. Thus the criterion of being able to reproduce scientific results cannot be fulfilled (Johannessen, 1999).

Ödman's (2007) puzzle metaphor in which the small pieces, i.e. the individual sentences or statements, are assembled into larger coherent sections, i.e. the categorizations and the broad categories, and made into a whole, was helpful. It made it possible to work with part and whole at the same time in a very concrete way. Thinking in terms of the puzzle metaphor, it was as if all the pieces that had a blue tint for the sky had been placed into one pile and those with a green tint to match the forest into another pile. When the puzzle was assembled, the pieces were re-categorized since the tints gave an impression of being a different colour earlier because blue and green nuances could be close to each other. In this way, the interaction between part and whole can be understood. Likewise, it is possible to change one's perception of what is relevant in the interaction between the initial interviews, the sorting into categories, and the finished analysis of the text. However, unlike a puzzle research does not have a ready-made solution. A more suitable metaphor for this work might be a tangram, a Chinese puzzle, where the pieces can create different patterns. The research questions provide the pattern that guides assembly of the puzzle.

Four main categories emerged through the process of categorization. The first category, *Being a harpist in an orchestra*, deals mainly with practical issues. The interviewees' descriptions of orchestral work are similar to the material in the background chapter, Chapter 2, which gives a historical and contextual perspective to practical issues. Practical issues are central when orchestral musicians discuss their profession. Musicians' craft is based on action, integrally related to the context in which it is performed and the issues that make the practice possible. The category *The space* was based on findings about physical space in the orchestra as well as different aspects of

musical interpretive space. The category *The people in the orchestra* emerged mainly from the interviews. The importance of the conductor is represented in the background literature and theory, but the focus on colleagues emerged from the interviews. The colleagues are part of the orchestral context. In the category of *Aspects of quality orchestral playing* what the interviewees say about qualities differs from what emerged from my analysis. In the interviews the informants conveyed that tone, tuning and ensemble playing are the most distinct features of excellent orchestral playing. However, through my analysis I came to a deeper understanding of knowledge and learning. As a result I identified categories of how to gain new knowledge, what the knowledge consists of, and what inner forces the musicians valued.

These four categories are divided into subcategories. In the category, *The people*, 'sharing through anecdotes', dealing with issues of sharing knowledge between colleagues emerged from an interview where two of the interviewees were present, thus its basis is not as substantial as that for other categories. But this phenomena was also present in other interviews, with me as the audience and also as a storyteller. To explore how I could best use this material I presented it at a *Fat Data* seminar at Malmö Academy of Music (May 2012) initiated by my supervisor, Liora Bresler. A Fat Data seminar consists of presenting raw data texts and discussing these texts with those invited. At this seminar I presented three extracts from my interviews that I categorized as anecdotes from orchestral playing and asked my fellow doctoral students, who, coincidentally, were also orchestral musicians, to comment freely on them. Liora Bresler was also present at the seminar. The seminar became a highly amusing conversation about the difficulties and enjoyment of orchestral playing told as anecdotes containing knowledge and information about orchestral playing. The material I presented did not become the basis for the discussion as I had anticipated it would, rather, it provided a trigger for the conversation. It confirmed that the relatively small amount of relevant interview material did provide a basis for how knowledge is transferred between colleagues.

4.5 Presenting the findings in Chapter 5

In Chapter 5 I aimed to present a descriptive analysis of the interviews. I chose a descriptive presentation in order to maintain a close relationship with the statements in the interviews, and to emphasize a perspective in which knowledge and learning emerge from everyday practice. Descriptions of everyday practice as well as of when everyday practice is challenged by different factors were central in the presentation of the findings.

In the gathering of data, as presented above, two different kinds of interviews were conducted. When analysing the interviews a methodological connection was made to Barone (2001) who conducted different kinds of interviews for his study. Barone

(2001) chose to present different kinds of material in different ways. However, in this study I chose to present the different interviews in the same manner and not differentiate between how the interviews were conducted.

In Chapter 5 I present quotes from the interviews. Some statements from the interviews were transformed into continuous text. When needed I provided explanations of phenomena the interviewees and I took for granted as common knowledge in the field. I also strove to keep an open mind and, as much as possible, not let my interpretations be unduly influenced by my knowledge of the field. However, since I conducted the interviews and made the analysis it is my chosen perspective that pervades the study. Every effort was made that all material in Chapter 5 emerged from the interviews and not from my pre-understanding, my experiences, or from the background material in Chapter 2. However, since my pre-understanding was the basis for the research it is not accurate to give the impression of extracting myself totally from the analysis or the presentation of the interviews. My intention was to try to reveal meaning to the reader, as I understood it, and to assign meaning, also as I understood it.

In the quotes in the text two kinds of references were used. If there was a single statement, initials of the first and last names of the interviewee were put in parenthesis after the statement. If there was a dialogue between interviewees or a question or comment by me, the initials were placed before the statement. In the text all interviewees were referred to with initials.

The quotes presented in Chapter 5 are based on the transcriptions of the interviews (see 4.3). However, some changes have been made regarding language and punctuation. When the informant had stressed a word it was written in italics. Omitted sections were marked with an ellipsis, (…). Unfinished sentences were ended with an ellipsis, …. When an informant was clearly quoting someone else, for example, with a different voice, it was noted in quotes. In cases where words had unclear meanings my proposal for a different word was put within brackets. Also my suggestions and interpretation of missing words were put within brackets. In the quotes, I have changed the text from the flow of the first transcription to more formal written language in order to facilitate reading. Thus some editing of the interviews has been done and some adjustments have been done. However, corrections have been made only to clarify the content and consequently I have chosen not to correct everything in the quotes. My aim was to mediate an impression of the personalities that were interviewed. An example is that the Russian expression ‘da’, that can be translated to ‘yes’ in English, was kept in one of the quotes (see 5.2.2), since it illustrates to me how we relate to our mother tongue when engaged in talking about a topic.

4.6 Gender issues

Three female harpists and one male harpist were interviewed. When choosing interviewees I did not aim to have an even division between male and female musicians. Nor was there an aim to represent the dominance of females among professional harpists. The issue of gender was not addressed in the interviews unless the informants themselves referred to it. This choice to not focus on gender issues was partly due to the relatively small number of interviews. Another reason was to avoid the gendered image of the harp that has been highlighted in other research and books on the harp (Del Mar, 1983; Griswold & Chroback, 1981; Lonnert, 2014b; Marson, 2005; Mcleod, 1993; Phelps, 2010). McLeod's (1993) study shows that in the 1980s, 90 per cent of harpists in American orchestras were female. This might give a picture of the number of female harpists compared to male harpists even though her study is not up-to-date nor does it cover the geographic area of this study. In light of her study, the division between male and female harpists in this study could be seen as representative.

Phelps (2010) observes that female harpists were among the first women to gain positions in orchestras, but that even in the late 20th century there were still orchestras that did not accept female members. Allmendinger, Hackman and Lehman (1996) show that once women start getting access to orchestral positions, there are three stages of female participation. The first stage is when there are so few female musicians, 10% or less, that it does not affect the male-dominated culture. The women in the orchestra often have a low profile and positions from which they cannot affect the existing norms. The second stage is the transitional stage when the women comprise 10-40% of the orchestra. Allmendinger, Hackman and Lehman (1996) show that this stage is the most problematic and affects the structure of the orchestra. When the orchestra reaches stage three, when the women are more than 40% of the orchestra, the orchestra becomes stable and balanced. Phelps (2010) shows that gender discrimination cannot be solved only by having blind auditions, but that the problem is rooted in gender constructions and stereotypes in education. The consequences of stereotypical gender choices include economic discrimination toward women in orchestras. She also recommends that working conditions for women in orchestras could be improved, especially regarding childcare and how women are treated in the orchestra.

I have chosen to keep gender visible throughout the thesis. As a consequence of this choice, in addition to presenting the gendered identities of my informants, writers have been presented with first names in the reference section rather than only with initials. This is not in accordance with the APA style for references that otherwise, with the exceptions noted in 4.10, has been used in the thesis.

4.7 Ethical considerations

Before the interviews, the interviewees were informed about the ethical guidelines for research as presented by the Swedish Research Council regarding the *information requirement*, the *consent requirement*, the *confidentiality requirement* and the *utilization requirement* (Vetenskapsrådet, n.d.).

S. Larsson (1993) argues that balancing ethics and validity can be difficult for a researcher. One way to address this problem is to present data so that it is not possible to identify the interviewees. However, it is possible that this may make the research less detailed or 'true', and therefore less relevant. I have chosen not to make the interviewees anonymous in order to enhance the transparency of the participant selection process and the reliability of the study.

I wanted to ensure that no misunderstandings or data that might be misleading were presented in the findings chapter, Chapter 5, therefore I endeavoured to have continuous contact with the informants. At the time of the interview, informants were offered the opportunity to read the eventual transcripts of the interviews and, later, the chapter on the interviews. Most of the informants expressed a desire to read the transcripts and the chapter in the thesis. After the interviews were conducted I asked the informants by mail if they wanted to add anything. I received an e-mail from one of the informants who wanted to make a point clear so it wouldn't be misunderstood. I also sent transcriptions of the interviews to all the informants, however, none of them commented on the transcriptions. Sending transcripts may be seen as a gesture from me as researcher of an open research process, but the transcripts in themselves were not reader-friendly. Kvale and Brinkmann (2009) note that transcripts of interviews may be problematic for the interviewees due to differences between oral language and written language. I thus emphasized that the transcripts were mainly to be used by me as a researcher, although some quotes would be used in the thesis.

At the end of the writing process, when the study was nearly completed, I contacted the informants to ask if they wanted to read the chapter on the findings from the interviews and if they would like to make comments and additions. Three replied that they would like to read the chapter. One of the informants noted misunderstandings and made suggestions for clarifications. The errors were corrected in the text. The clarifications in the quotes were made, however no major changes were made.

Before the final proofreading I contacted the informants to ask if they would like to read the whole thesis, and they were encouraged to comment on the text and to make corrections. Three of the informants were sent the whole text. I made some changes in the quotes after this final contact before printing. However, no major changes were made. One of the quotes from an interview was substituted by a quote from an e-mail since I found the explanation in the e-mail richer (see 5.3.3).

By letting the informants read the text in different stages I aimed to test and confirm my findings by having continuous contact with, and by getting feedback from, the informants (Miles & Huberman, 1994).

Barrett and Stauffer (2012) propose the notion of *resonant work*, which, as well as the product, describes a process in which all participants are involved.

> "Resonant" in that the inquiry resounds in the lives of the inquirer and those with whom the inquirer engages, as well as those who engage with what is created; "work" in that it is a practice (verb) that produces an artistic or textual account (noun) that can be shared. (p. 8)

This concept addresses quality in the process and qualities of the product but also ethical issues. They describe four criteria: responsible, rigorous, respectful and resilient. The ethical considerations are based on the relationship between the researcher and the participants in the broadest sense, regarding not only the treatment of the interviews but the whole research process and product. Ethical considerations pervade all research relationships, not only those between researcher and participants, but also those between the research and the audience. Ethical considerations apply to, for example, how all the methodological choices in the research are made and presented, how the role of the researcher is considered and presented, and how the research can be used in the future.

4.8 Quality in a qualitative study

One of the main aims of the methods chapter in this study is to focus on understandings of quality. The purpose of presenting the different decisions made in the study and their connection to methodological theory is to clarify the process and to describe it as truthfully as possible to the reader. By means of these descriptions the reader should be able to evaluate the different choices made. Knowing the choices made regarding the methods and quality criteria used in the study, the reader must also have a basis for assessing these criteria. Different scholars have different notions of what constitutes quality in qualitative research; they also have different views on criteria for quality and different ways of assessing validity and reliability. Concepts may be interpreted differently and the use of the same concepts in different kinds of research makes the vocabulary used in qualitative research problematic.

Examples of different uses of concepts can be found in methodological literature. Patel and B. Davidson (2003) emphasize that the concepts of reliability and validity have fundamentally different meanings in qualitative studies compared to their use in quantitative studies. This is also acknowledged by Kvale and Brinkmann (2009) who note that some qualitative researchers relate concepts such as validity, reliability and

generalization to positivist research and therefore find them unusable. Therefore it is necessary to understand these concepts in other ways or to use other words to discuss these research-connected questions. Silverman (2010) explains the concepts of validity and reliability in qualitative research with an interpretation that differs from most other scholars. According to him, validity can be regarded as an alternative word for 'truth' and he offers the following criteria for validity. He claims that a research study is not valid when the original form of materials is not available, when the criteria for selection are not available and when there are too few examples presented. He describes reliability as the ability to reproduce, or be consistent with, the interpretation by a different or the same observer. This use of 'truth' in qualitative research is not generally accepted in methodological literature, nor is his interpretation of the concept of reliability. However, Silverman's basic methodological ideas that it is important to document the procedure and that it is important to clarify to the reader of the report that the methods are reliable and the conclusions are valid are common to all of the methodological literature referred to in this chapter.

In addition to observing that concepts are defined and used differently in different kinds of research, Patel and B. Davidson (2003) also acknowledge that the concepts of reliability and validity are often defined similarly in qualitative research which can be problematic. Their standpoint differs from Silverman's in that they claim that validity in a qualitative study must refer to the whole research process, including the researcher's role, analysis and interpretation. Since all qualitative research processes can be regarded as unique cases they claim that it is not possible to assure validity by setting up rules or procedures. However, this does not imply that it is not possible to discuss validity especially regarding data collection, analysis and communication of results. Reliability in qualitative research is particular to the unique case rather than to issues that may be confirmed through repeated investigations of the phenomena. Kvale and Brinkmann (2009) relate reliability to all the steps in the research process and to the consistency and the trustworthiness of the process. They problematize the concept of validity further from Silverman's definition of validity as truth. Validity as a criterion of quality is related to the craftsmanship and credibility of the researcher each part of the research process. Here the researcher's meticulousness is essential to validation which they describe as consisting of checking, questioning, and theorizing. A transparent research process and convincing results are the goals.

The concepts of quality underpinning this study are more closely related to the interpretations of Patel and B. Davidson (2003) and Kvale and Brinkmann (2009) than to the interpretation of Silverman (2010). The aim of this chapter is to describe the procedures in every step of the research as truthfully as possible and to relate the research to methodological literature and concepts. Validity in this study is not understood as truth but as the credibility of the researcher and the research process. Reliability is in the consistency of the research process. Understandings of quality in this study draw upon methodological writings by S. Larsson (1993) and Miles and Huberman (1994) below.

S. Larsson (1993) problematizes the notion of criteria in qualitative research. In an article on quality in qualitative studies he demonstrates the difficulty of setting criteria. However, he believes that in many contexts it may be relevant to discuss how to evaluate qualitative studies. Two of the areas he mentions, but does not treat in depth, are the proper handling of formal requirements and that the format is appropriate for the study. The areas he considers important for the assessment of qualitative studies are the whole, the results and validity. He believes that the whole shows the researcher's awareness of having a chosen perspective and how the researcher treats this awareness. It also deals with the internal logic, i.e. how the various elements harmonize. The third point is the ethical value of the scientific study; this concerns ethical questions about the informants and the researcher's scientific integrity. To assess quality regarding the concept of the whole is especially important when working with the hermeneutical approach as described in Chapter 4. The notion of the whole is important to the many layers of the research as well as to the report about the research. The whole relates to the structure, the presentation, as well as to the theoretical perspectives chosen. Since some of the basic structural elements are given by the tradition one works in, as described below, part of the notion of unity requires assessment of how these elements have been fulfilled.

S. Larsson (1993) asks how one can evaluate the quality of the results. He believes that richness of the material is important – that the reader can understand what is essential and get a detailed picture of the content. He believes that the richness can be in tension with the structure. The structure should provide a good form and a logical analysis. Regarding the results, he emphasizes the central role of theories in qualitative research at all stages of research, from gathering materials to analysis and interpretation. Results of this study should be evaluated in terms of how soundly they are based in the empirical data and how the data has been treated. This is not only in relation to presentation but also to the choices made by the researcher during analysis and to ethical considerations. The main objective of the methodology chapter is to describe the choices made by the researcher.

While S. Larsson (1993) sees the validity of the study as central he argues that it is difficult to draw a boundary between the quality of the text and the validity of the results. Bresler and Stake (1992) claim that the quality of the research and the quality of the report about the research are not the same. The first criterion that S. Larsson (1993) proposes is the *discourse criterion*, i.e., that the argument shows that the chosen analysis is reliable compared to alternative solutions. However, there may be difficulties with this criterion, since it operates within the prevailing discourses. He points out that qualitative research should contribute something new in order for the reader to see the phenomenon from a new perspective, which is known as its *heuristic value.* Another significant point is *empirical anchorage*, that the interpretation and the study are compatible. This can often be achieved by triangulation of the material, where theory, other research or other empirical data can be compared with the material. Lincoln and Guba (1985) point out that triangulation is made with the *data* in the investigation,

where ‘a datum or item of information derived from one source (or by one method or by one investigator) should be checked against other sources (or by other methods or investigators)’ (p. 315).

Some criteria fit a certain kind of theory, says S. Larsson (1993). For example, the *consistency criterion* where the criterion is the interaction between part and whole is central in a hermeneutic tradition, whereas in other theories this criterion may be meaningless. His final criterion is the *pragmatic criterion*: he argues that the value of this is the use, or the consequences, of the research results.

The different elements of validity described by S. Larsson (1993) raise several issues that are difficult to evaluate. Most of these criteria are related to the credibility of the researcher as assessed by the reader. The criteria specific to argumentation and credibility of the researcher are based on the meticulousness, awareness and the researcher’s knowledge as well as the quality of the descriptions of procedures. The criteria that are related to the future such as the heuristic value and the pragmatic criterion, are more specific to the knowledge and interests of the reader. Assessing something new in research and seeing the possible use of the research can be initiated by the researcher, but also has to be done by the reader.

Miles and Huberman (1994) set up standards for evaluating the quality of conclusions in a qualitative study which they group in five categories. The first is objectivity/confirmability and deals with the researcher’s relationship to the research, which they claim should be relatively neutral. It is important that the researcher thoroughly explain his or her role, choices, biases, and procedures in research and methods. The second category is reliability/dependability/auditability, which they describe as testing whether the process is stable and consistent. Of concern in this area is whether the researcher has been careful with the procedures at all levels when doing the research. They also emphasize the importance of explicit explanation of the procedure to the reader of the report. The third category is internal validity/credibility/authenticity. This is described as testing whether the findings are credible and make sense, i.e., the truth value, a notion they consider central to qualitative research. Important considerations in this area include whether the reader finds it credible, which is based on how each procedure is done, reported, and explained, how everything in the report is connected and coherent, and the researcher’s critical view of all issues. The fourth category is external validity/transferability/ fittingness and deals with the possibility of transferring the research to other areas or the possibility of generalization. Transferability is based upon the descriptions and reporting of the findings, and generalizability is based upon the researcher’s connection of findings to theory, method and analysis. Miles and Huberman’s (1994) final category is called utilization/application/action orientation and deals with how the research affects those involved and others. A wide range of connections is offered regarding this issue and Miles and Huberman (1994) emphasize that it also includes a question of ethics.

In this chapter on methodology I have attempted to describe the different methods and other issues as truthfully as possible to the reader so that it will be possible to evaluate the different aspects of this research. As well as describing the different procedures, I have examined different stages of the research process in relation to methodological literature. Not only have I described the separate stages based on data, such as the choices of interviewees, how the interviews were conducted, the interpretation, the analysis, the categorisation, and the presentation of the interviews, but also ethical issues and issues related to gender. It has also been important to connect the chapter on methods to a methodological theoretical perspective, in this case a hermeneutical approach, and to relate the methodological issues to the theoretical perspective chosen in the study as a whole, as described in the sections below (see 4.9; 4.11). In terms of Miles and Huberman's (1994) standards, their first three categories primarily concern the descriptions of procedures, choices of the researcher, and the role taken by the researcher, as described in this chapter. The notions of the fourth category, external validity/transferability/fittingness, are addressed in Chapter 6 and Chapter 7 where the findings are combined with theory and the possibility of structural understanding. Miles and Huberman's (1994) final category of utilization/application/action orientation is the most difficult to assess since the possibilities for application lie partly outside of the thesis itself. Not all ethical issues are possible to foresee. From a hermeneutical perspective, I recognize that it is the reader who is the interpreter of the text, and who will have to address Miles and Hubermans final category.

Bresler and Stake (1992) propose a contrasting view of research and the researcher's role:

> The most important criterion for any research is that it is about something important, important to the readers as well as to researchers. Researchers are given great respect for recognizing what needs to be studied, and they should not abuse that privilege. (Bresler & Stake, 1992, pp. 85-86)

They argue that relevant research must be relevant to both the reader and the researcher and imply that the researcher has a responsibility for his or her research. From this criterion many questions arise, such as: when will this research be important, for whom and for what purpose? Bresler and Stake's (1992) criterion resonates with the last category of Miles and Huberman (1994 as described above. On the other hand, if I, as a researcher, did not believe what I do to be important why would I do it? In qualitative research the researcher's role is central and has to be consciously considered regarding all issues, thus why this research is done is a fundamental question.

Some of the criteria posed in qualitative research, as described in this section about quality in qualitative research, cannot be met in this study. Validation defined as truth (Silverman, 2010) is impossible to fulfil. It is probably not possible for another researcher to reach the same results without, for example, my pre-understanding or with a different theoretical framework. However, my intention is that by explaining

procedures make it possible for the reader to evaluate the research (Larsson, 1993; Miles & Huberman, 1994).

4.9 Research context

All choices made in a dissertation are dependent on the research context and the tradition in which it is written; this is also a methodological issue. One way of addressing this relationship is through a broad hermeneutical approach regarding the meaning coherence or principle of totality (Alvesson and Sköldberg, 2008; see 4.3). Thus, methodological implications of historical and contemporary research contexts are examined in this section.

Three streams of research on musicians' professional practice are: biographies, reflection on one's own practice and investigation of a limited practice. Although musicians have been interviewed, this study is not based on biographical material. Its focus is on a limited practice – harpists' experience of orchestral playing – and the interview form situates this study in the music education research tradition of the Malmö Academy of Music (Musikhögskolan i Malmö), Lund University. Its connection to my own practice, while not explicitly describing my own practice, also connects it with previous research in music education at Malmö Academy of Music. The theoretical framework used in this study is related both to research on professional knowledge at the Royal Institute of Technology (Kungliga Tekniska högskolan) and to research on practical knowledge at Södertörn University (Södertörns högskola) through the use of a practice perspective and classical philosophy. This study is aligned primarily with the research of these three institutions.

Swedish research on knowledge within professions emanates from a view of practical knowledge that came into focus during the 20th century. From the second half of the 20th century interest in practical knowledge transformed ways of looking at knowledge. Practical knowledge and skills were highlighted in epistemological, educational, historical and philosophical contexts. Theories of practical knowledge were applied to practitioners within research. Schön (1983/1991), who developed Ryle's thoughts from *The concept of mind* (1949/2002), was a significant contributor. Through case studies, Schön demonstrates how problem solving occurs in practice. He believes that in a problematic situation in a practical profession identifying the problem is the first step. As a second step the problem can be formulated, and after that the problem can be solved. While the problem is seen as a unique case, it occurs within a context where previous experience, or a repertoire of possibilities, can be used. In a practical profession there may be many possible ways to solve a problem and situations are often characterized by an instability and uncertainty. Schön shows that action and reflection are linked in practical professions. B. Molander (1993), who presents Schön's research and summarizes and describes Swedish research on professions, contends that the

definition of practical knowledge also is a political battle since it is about the power of defining what can be regarded as science and knowledge. It is a matter not only for the individual practitioner and researcher, but also for communities and the society at large.

Research on practical knowledge in Sweden has been conducted at the Royal Institute of Technology in Stockholm (Gustavsson, 2000) since the 1980s, where Bo Göranzon has led the section of Skill and Technology (Yrkeskunnande och Teknologi). There are three main philosophers who have been significant to their research: Allan Janik, Kjell S. Johannessen and Ludwig Wittgenstein. Their research is also influenced by research conducted in Bergen by Kjell S. Johannessen and Tore Nordenstam (Gustavsson, 2000). The researchers in the Skill and Technology section are interested in bringing an epistemological discussion of practical knowledge into the philosophy of science, into other disciplines and into artistic expressions.

Reflection on knowledge within professions is central to the research at the Royal Institute of Technology. One of their central forms of work has been the dialogue seminar where individuals from different disciplines and knowledge traditions meet to expand and explore knowledge through conversation. The methods of the dialogue seminars are based on reading, writing, reflection and dialogue, and in this method, creation of knowledge becomes a collective process (Ratkic, 2006). Ratkic (2006) found that this method offered a means of obtaining empirical data for research. Nordenstam's (1968) research in Sudan where he conducted continuous dialogues with his three informants instead of conducting interviews to be analysed later in the research process provided an important model for this method. Research on music has been conducted in conjunction with the Royal College of Music (Kungliga Musikhögskolan) in Stockholm, and to date, Åberg has submitted a doctoral dissertation in 2008 (English edition 2010) in which he studied teachers' practices at a music academy. Åberg (2008) shows how, when teaching in higher music education, the musician's practice is transferred to the student. Åberg (2011) has continued using the dialogue seminar form to investigate music education practice. While Åberg's text is primarily based on dialogues he also acknowledges the significance of his own voice in the presentation of the material. The text is permeated with the theoretical perspective used but is different from most music education research due to a different approach to presenting sources.

Clas Pehrsson has been important in the development of co-operation between the Royal Institute of Technology and the Royal College of Music. He has supervised PhD students in different subjects and also worked with method development at the Royal College of Music. He has presented experiences of and thoughts on music education, music performance and research in a volume of non-traditionally presented research (Pehrsson, 2012) which in the tradition of practical knowledge can be regarded as research on music and education. Research on music education issues inspired by Johannessen's Wittgensteinian perspective has been conducted in Bergen, Norway, by Osa (2007). Research on music educational issues inspired by a Aristotelian perspective and which also has a focus on aspects of knowledge has been conducted by Georgii-Hemming (2013).

Researchers at the Centre for Studies in Practical Knowledge (Centrum för praktisk kunskap) at Södertörn University have chosen to focus their research on professional practice on the humanities rather than the social sciences with a primary interest in communication within human occupations such as health care, but also other professions such as those within artistic practice (Svenaeus, 2009). Within the series of publications they have published, two volumes are of interest to this study: *Vad är praktisk kunskap?* (*What is practical knowledge?*) (Bornemark & Svenaeus, 2009) and *Reflektionens gestalt* (*The form of reflection*) (Fjelkestam, 2009a). In these volumes, researchers and teachers contribute as well as master students. The chapters by the master students are based on the master students' revised essays that deal mainly with their own practice. During their education, these master student-practitioners explore their own practice by, for example, writing. Fjelkestam (2009b) describes how the educational reflection process takes place in three stages: the first is to find a problem within an example, the next step is to make a generalization based on the example and the third step is a critical review. This process is the basis for the reflective writing on professional knowledge applied at Södertörn University.

Music education research at the Malmö Academy of Music is based primarily on empirical data in the form of interviews. Two doctoral dissertations have been published investigating musicians' practice in the Western art music tradition. Johansson's (2008) thesis deals with practices of organists regarding improvisation. Ljungar-Chapelon's (2008) thesis contains two case studies and addresses teaching practice and musical practice in the French flute tradition. To some extent, these two theses relate to professional research at the Centre for Studies in Practical Knowledge since the two authors also examine their own practice. Both have experience in the practices they investigated, and have pre-understandings of the investigated phenomena.

As described above, this study is foremost an investigation of a limited practice and grounded in the traditions of research in music education at Malmö Academy of Music, Lund University. I am a musician, however I did not focus on my own practice, and I used interviews as a method to investigate a practice. This is similar to the doctoral dissertations of Ljungar-Chapelon (2008) and Johansson (2008). However, the theoretical perspective used is similar to the research at the Royal Institute of Technology and the research at the Södertörn University. Using theoretical perspectives from these two institutions made it necessary to evaluate knowledge in the way described below (see 4.10), in which different kinds of knowledge can contribute to the full body of knowledge.

The thesis follows the IMRAD (Introduction, Method, Results and Discussion) form that was developed for reports in natural science (Strömquist, 1999). This is the required structure for doctoral dissertations in music education at Malmö Academy of Music. As described in the section on quality above, concepts and structures emerging from research in natural science are not always transferable to a text in the humanities. In some cases I have chosen to change headings from those prescribed by the IMRAD

form. I find the term 'results' a misleading heading when presenting the analysis and interpretation of the interviews. Miles and Huberman (1994) use the term 'findings' as an alternative. I also find the term 'discussion' problematic and misleading, I would prefer to emphasize the encounters between theory and empirical data that are the bases for my reflection, whose purpose is to create a synergistic effect. Different terms are used such as 'conclusion' (Nielsen, 2006) and 'conclusions and implications' (Gaunt, 2006), and often the results and discussion chapters are intertwined.

From a hermeneutical perspective there cannot be a dialogue between a reader and a text, nor can there be a discussion between different texts (Ricoeur, 1986/1988). Feyerabend (1988) concurs that the text cannot have a dialogue with the reader. This has the consequence that, even if the writer aims to be transparent in the process, it is possible that the reader interprets the text in a way unanticipated by the writer. Since a thesis always consists of different interacting texts it is important to remember that all texts in a thesis are chosen by the writer of the thesis, whose chosen perspective will always permeate.

4.10 On sources in Chapter 2 and Chapter 3

Since a hermeneutical approach has been used as a methodological basis, methodological issues concerning the study as a whole must also be considered in addition to methodology related to data. In this perspective, it is important to consider and give the reader the possibility of evaluating the sources used in the background and theory chapters.

In Chapter 2, the background chapter, different kinds of sources have been used. Some of the sources are from harpists themselves in interviews, autobiographies and books on specific subjects. Other resources complement these, such as biographies and books by non-harpists on specific subjects such as orchestration. These sources provide a parallel to the interviews presented in Chapter 5, in which the interviewee's voices are heard. The material presented in Chapter 2 consists of what these musician-writers have chosen to convey. It consists of stories from professional life from autobiographies and interviews, and of information considered important to communicate to colleagues or others through published books. Bresler and Stake (1992) argue that literature, such as biographies and autobiographies, may be a source in qualitative inquiry. Chapters 2 and 3 also report research in the field, some of which some has been presented in 1.2.

Thurén (2005) writes about principles of *source criticism*. Of particular interest are the *tendency criterion* and the *dependence criterion* he describes. The tendency criterion deals with the inherent bias in a source. Data from interviews or books are often inherently biased because they have a purpose and contain something that the author or the interviewee has chosen to convey. However, this inherent bias might be important to a

researcher who can study what these sources convey. The dependence criterion deals with how sources relate to each other. The interdependence of sources need not be seen as a problem, since it can reinforce statements by strengthening certain parts or by presenting arguments against them. However, it is important that a researcher who examines historical sources has knowledge of how to evaluate and analyse them.

The material in Chapter 2 is triangulated with the theoretical perspective of Chapter 3 and the interviews in Chapter 5. Historical and contextual materials provide supplemental perspectives concerning orchestral playing for Chapter 5. One example of issues that were discussed in the interviews and are reflected in the background material is the harpists' concern about composers' knowledge. In the interviews in Chapter 5 the harpists mentioned books on orchestration as sources of information (see 5.1.1); in Chapter 2 books on instrumentation are critiqued (see 2.2.2) as well as harpists' analysis of problems and attempts to educate composers (see 2.2.1), and solutions to problems in parts (see 2.1.3). These three aspects – source reading, education, and contextual problem-solving – are part of the profession of being a musician as portrayed by the interviewees. The sources presented in 2.2 reinforce the statements in the interviews in Chapter 5 more than additional interviews would since they provide over a century of historical perspectives on orchestral harpists' work.

Choosing to use material from interviews, autobiographies and other non-scientific literature can be regarded as choosing to use anecdotal evidence, which may be contrasted with scientific evidence. Since, as a researcher, I have made this choice, I must show how I analyse and interpret these sources. In Chapter 3 where the theoretical framework is presented some other sources resembling those in Chapter 2 appear. These sources serve to anchor the theories in a practical musical context. Choosing interviews as empirical data for a study and presenting excerpts of the interviews as quotes, as in Chapter 5, may also be considered anecdotal evidence. As a counterpoint to this I, in this study, draw upon the tradition in which all human experience, whether presented in fiction, autobiographies or interviews can provide a basis for knowledge. It must also be remembered that practical knowledge is seldom transferred as articles in peer-reviewed journals. The choices I made can be compared to Ljungar-Chapelon's (2008) thesis where he chose to present similar material, such as books on instrumental practice, in the results chapter and not in the background chapter. Cottrell (2004), who writes in an ethnomusicological tradition, does not distinguish between different kinds of data in this way, but uses observation, material from interviews conducted by himself, interviews published in books, material from television documentaries, and his own experiences as data of equal importance in his study.

Some sources in Chapter 2 are based on research conducted by professional researchers and some on research by non-professional researchers. For example, Marson's (2005) *The book of the harp* serves as an example of the latter. While not foremost a researcher he made a major contribution by compiling literature specific to the harp. Another kind of semi-research source is the book, *A Harp in the school: A guide for school ensemble directors and harpists,* edited by the harpist Chelcy Bowles. Bowles has a PhD in music

education however the volume presented here is not mainly addressed to the research community but to practitioners in the field. However, is it likely that Bowles used her research background when editing this book.

All researchers who are researching a topic that they are familiar with have to address issues of common knowledge in the field. In a topic such as orchestral playing that is mainly based on practice and not on research, one must choose how to confirm the knowledge of the field. For example, Liljeholm Johansson (2010) describes the hierarchy of the orchestra based on her accumulated knowledge from 16 years experience as an orchestral musician. I can thus refer to her thesis as an authority when describing the hierarchy of the orchestra (see 3.2.6; 3.4). I could have used my own experiences as a source of knowledge but to use another authorial source, in this case a thesis, supports my authorial voice in my thesis. Cottrell (2004), who bases his work on his own experiences and on observation, does not provide scholarly references for many of the issues considered common knowledge in the field. As another example Davis (2004), who is not a researcher, aims to describe orchestral practices in his book and therefore he might be seen as an authority in the field. Davis is also used as a source by other researchers (Dobson & Gaunt, 2013; Love, 2013).

Chapters 2 and 3 are inspired by Aristotle's approach (Nussbaum, 1993) to gaining knowledge. He says that one first must gather all knowledge about the object in as many ways as possible: these can be scientific truths, as well as popular, scientific and non-scientific explanations and approaches. It should include both what the common man and the wise man think. All of these approaches need to be specific to a particular issue or case rather than general. Thereafter differences such as the conflicts and contradictions between various approaches should be regarded. Next it is important to go back to the object or phenomenon itself, since it is not possible to understand only through rational thinking and reasoning. It is possible to find an essential common denominator based on the knowledge collected but there is also a need to take into account the object itself and one's own experience.

I also take inspiration from Wittgenstein's view of the function of philosophy from the *Tractatus logico-philosophicus*, in which philosophy becomes a tool for understanding.

> 6.54 My propositions are elucidatory in this way: he who understands me finally recognizes them as senseless, when he has climbed out through them, on them, over them. (He must so to speak throw away the ladder, after he has climbed up on it.)
>
> He must surmount these propositions; then he sees the world rightly. (Wittgenstein, 1922, p. 90)

In this study I have used parts of Wittgenstein's philosophy, but also done what he describes by going through and beyond his philosophy. I have chosen to go deeper into some aspects with the help of other philosophers with whom I have been able to focus

on the practical knowledge of music and yet keep myself within the required literary genre.

In this thesis the APA style of referencing has been used with the exception of antique sources in Chapter 3. In quotes from Aristotle the Bekker numbers have been used, and in quotes from Plato the Stephanus pagination has been used. It should be noted that Book 11, in which Augustine writes about the concept of time, often is omitted in editions of his *Confessions*. References to Augustine are given with the number of the book, the chapter, and the paragraph. I have also chosen to present some of the persons referred to in the chapters with their first names rather than only initials, for example, the sisters Sidonie Goossens and Marie Goossens.

4.11 Transformation: from henid to thesis

When data collection for this study began, a substantial part of the theoretical framework and background chapters had already been written. These had been written for a previous study based on different interviews than the present study and with a different focus, yet with the current study and research questions in mind. This previous study was examined as a licentiate thesis (Lonnert, 2011), which was not published although the results were presented at conferences (Lonnert, 2012a; 2012b; 2014c).[3] The main objective of the previous study was to create a theoretical framework. The choice of informants and research questions in the first study created a model for research about professionalism in an educational context. The previous study thus affected my pre-understanding as to what I was studying and also likely affected the interviews, although it might be difficult to specify exactly how. The main outcomes from my previous study that might have changed my pre-understanding were related to contextual learning and the importance of emotions in the process of learning.

However, since the background chapter and the theoretical framework were written before the collection and analysis of data had been carried out, it was important to remain open to the possibility that these chapters would change in response to the study since some of the previous material might not remain relevant. An interesting issue is the relationship between the data and the theory. The theory can be seen as a basis for the study and the results obtained, but in qualitative research this connection can be viewed from two sides. Insights from a study can create different epistemological views and enrich a theoretical framework, since conducting qualitative research is not a linear process, which a thesis may give the impression of it being. The theoretical framework

[3] A licentiate degree in Sweden is an academic degree counted as half a PhD requiring two years of study whereas a full doctorate requires four years.

in this study was constructed to apply to different aspects of musical learning and knowledge. This aim was put into practice during the writing of the thesis by using parts of the framework to highlight specific aspects of musical learning. In Lonnert (2013) it was used to highlight how the musical example can be understood and used in teaching and learning. In Lonnert (2014a) it was used to highlight issues of intuition in music performance, teaching and learning.

Since much of the theoretical framework was set, I kept the interviews as open as possible. The aim was to avoid guiding too much and to keep my mind open to unexpected aspects of orchestral playing. The informants knew that the main focus was on orchestral playing, and this topic was the central focus in all interviews. In the process of interviewing I considered the research question to be a henid in the sense developed by Landquist (Landquist, 1906; Larsson, 1912; see 3.2.5), unformulated knowledge of what I wanted to accomplish. Hence no research questions or pre-constructed interview questions were asked in the interviews. Nor was there a set decision on how many and which musicians would be interviewed although the basic criteria were set as I have described in 4.1.

Early in the process of categorization and analysis of the interviews four preliminary research questions emerged: What are the frames of orchestral musicians? How can they be treated to create musical freedom? What are the skills of experienced players and how can they be learnt? What are considered as qualities? These questions were considered to be sub-questions to the main research question. The questions were deliberately kept very open and vague since my aim was to be open to unpredictable data from the interviews. One example of something I had not considered as an aspect of quality orchestral playing before the analysis was the informants' interest in issues that could be seen as non-musical but that showed their interest in their work and their will to understand and perform better (see 5.4.3).

The main research question, *How are issues of knowledge in orchestral playing expressed in interviews with experienced orchestral harpists?,* was formulated precisely before Chapter 6 was written although the content of the research question had been clear early in the process. However, the final version of the research questions, maintaining the fundamental content of the questions, was open to changes throughout the writing process. During the process of formulating the research question the connection to issues of knowledge as epistemological issues moved into focus. This focus led to the emergence of Chapter 7.

I finally changed the main research question from a 'how' question to a 'what' question to change from the methodological focus I used when working with the findings to a subject-oriented focus. The issues discussed in the interviews should be central rather than how things were said. The choice of the word 'qualities' in one of the sub-questions proved to be a difficulty when writing in a second language. There was a nuance in the use of the word that was difficult to grasp. The suggestions I got such as skills, characteristics, personal attributes, and attitudes did not cover what I was aiming

for. Quality aspects of performed music cannot only be attributed to the performer but also to the listener. Qualities are subjective and based on evaluation, but they also have a level of excellence, proficiency and skill. One example is the quality of the tone (see 5.3.1), which is dependent on the skills of the performer, but also on the subjective evaluation of the performer. However, as noted in the interviews, the quality of the tone is also dependent on the subjective evaluation of the listener. And, as identified in this study, quality aspects of orchestral playing also are also dependent on musicians' attitudes towards their work (see 5.4.5; 5.4.6). These attitudes could not be seen as neutral but as personal qualities that can enhance a musical performance.

A decision I made quite early in the process was to write in English. I have a basic understanding of how to write in English. However, I have difficulties understanding the exact nuances of words, and might have misinterpreted some words, and I also make grammatical mistakes. To a proficient English reader my text is probably slightly awkward, even though it has been proofread. As an analogy, I thought of the work of a composer. A composer writing an orchestral trumpet part who lacked insight into details of how to play trumpet would probably write an awkward part. It would be playable, but not idiomatic. But, hopefully the quality of the orchestral work as a whole is worth the effort required to play an awkward part. This is what my informants say about harp parts in some orchestral works, where the totality of the orchestral work is so good that the awkwardness of the harp part is of minor importance (see 5.1.1). Writing in a second language means that I have been thinking between the languages or outside the languages. An obvious result of this thinking is the use of frames as explained in 1.3.2.

The different steps, or chapters, in a thesis provide a structure. In the IMRAD tradition, in which this thesis is written, certain material is requested in different parts. It should present the material in a form that the reader will easily recognize and understand. In this thesis, for example, the categorization in Chapter 5 helps the reader understand the relationship between the research questions, the presentation of data and the theory. But in the light of the theoretical perspective chosen in this thesis a more fundamental reason emerges. During the analysis process the interviews are transferred step by step to a structural level that is further developed in Chapter 6 and in Chapter 7. Cassirer's (1944/1972) notion about the individual case as met in the world, and the structural as shown in research, is demonstrated in this process. In the unique case we meet the world but in the structure we make sense of the world. The focus in Chapter 5 is on the individual statements by the interviewees with the aim of keeping the statements at an individual level. The aim of Chapter 6 is to combine the interviews with the theoretical framework and background to deepen the understanding and to create a structural understanding emerging from a limited practice. The aim of Chapter 7 is to create a deeper structural understanding of questions regarding music education, orchestral practice and performing music. The question *why we generalize from an interview study* posed by Kvale and Brinkmann (2009) is important for Chapter 7. An

issue that emerges from their question is whether it is possible to understand structural elements originating from a limited practice.

Research about a limited practice may be seen as uninteresting to a wider audience. But the richness of a limited practice can also transfer to a wider audience by raising general questions and for use in analogical thinking (Johannessen, 1999/2002) such as when a particular case has relevance as a particular case. The structure created by the research can also be a way of addressing additional questions. In this case the structural understanding can inspire questions about orchestral practice, music education, and working conditions as well as questions about the framing of a musical practice. Bresler and Stake's (1992) criterion that qualitative research should be about something important can be considered in the light of these views, how the structure *and* the unique case can lead to reflection by the reader.

To address Bresler and Stake's (1992) notion that research should be about something important, I consider my own educational interests. As a beginning doctoral student I also had to consider an issue I experienced as a harpist and teacher, that I found in the literature, and that my informants spoke about. The issue was an idea of educating composers, conductors, and administrators about the special problems and possibilities of the harp. As seen from a historical perspective, this struggle cannot be resolved; the issues have to be revisited over and over again. The educational agenda pervades this study even if its aim was different and more profound. As a harpist and a teacher this educational idea was important but as a researcher it was only a starting point.

Chapter 5, Chapter 6, and Chapter 7 can be seen as a progression. In Chapter 5 the aim is to present a descriptive analysis of the interviews. The aim is also to create an empathic understanding where professional knowledge can be understood as emerging from everyday experience and practice. Chapter 5 together with Chapter 2 aim to provide a description of a professional practice. Chapter 6 contextualizes the issues in Chapter 5. The aim is to create a deeper understanding through contextualization, relating to the chosen theoretical perspective and also to possibilities of analogical thinking. By relating the findings to the theoretical framework it is possible to understand the relatively small amount of material in a wider context. Consequently, the role of the theoretical framework is to provide a basis for creating knowledge from findings. As a consequence of the contextualisation of the issues discussed in the interviews I have chosen not to attribute any of the quotes to the informants in Chapter 6. I only refer to the sections where the quotes can be found. The aim is to make the section more focused on the issues and less on the persons – on what these musicians do, and not on who they are.

The aim of Chapter 7 is to assess the consequences of the research, in the sense used by Miles and Huberman (1994) for whom addressing possible consequences is a quality criterion, and to provide a structural understanding, in the sense used by Cassirer (1944/1972) who claims that research is related to structural understanding of the issues.

Chapter 5.
Findings from four interviews

In this chapter material from the interviews is categorized in four main sections. The first section, *Being a harpist in an orchestra*, deals with mostly practical issues. The second section, *The space*, deals with the physical space and musical interpretive space. The third section, *The people in the orchestra*, covers relationships with colleagues and conductor. The fourth section is called *Aspects of quality orchestral playing* and deals with qualities identified by the interviewees, and with emergent issues regarding qualities from the interviews. In this chapter the informants and myself are identified with initials of our first and second name, e. g. AL, KV, LL, NS and NT (see 4.2; 4.5).

5.1 Being a harpist in an orchestra

Under this heading different issues concerning orchestral playing are described: issues concerning orchestral harp parts including composers' knowledge of writing for harp and how harpists prepare the part before playing; issues concerning playing in the orchestra including mental, physical and practical issues; and issues concerning how students learn orchestral playing.

5.1.1 The orchestral part: preparation and interpretation

Harpists usually prepare their parts before rehearsal by writing fingerings, pedal markings and, possibly, enharmonic changes. Orchestral harp playing requires instrument-specific preparations and consideration of contextual problems that are unique to harpists. This preparation often takes a lot of time; other instrumentalists do not have to prepare their parts in a similar way. However, as KV notes, having harp-specific preparations does not mean that other instrumentalists do not have special preparations, for example, reed players have to make reeds. Neither does it mean that there are not contextual problems for other instruments in the orchestra or that comparable problems do not occur in other instrument groups.

For a harpist it is necessary to have a system for making accurate notations in orchestral parts which are easy to read while playing at quick tempi. Pedal markings are the most important element of a harpist's markings. NS describes the system used at the Bolshoi:

> We used to put on the upper rank right leg pedals, that we move by right leg, and under this left. And it is very important because you have just very short time to read and it should be exactly what you need to do. Some harpists when they use already used scores, they put their own pedal marks and rewrite everything. And sometimes with red, blue, black ink and when you try to read all these markings there is no possibility to be in time with the orchestra. In the clean part it's your own choice how to do all those marks. If a harpist has only a part that has been used and is already marked then she or he should have respect for the job that was done before them. (NS)

As described by NS in the quote above, harpists usually have personal systems of marking pedals in the parts as described in the quote above. But they must also be able to read and understand other harpists' systems. Sometimes, since harpists use different systems, it might be difficult, as NS notes. Harpists do not always erase markings in parts after they have been used. At the Bolshoi, several harpists use the same part in the performances and the principal harp decides on the notation. Markings for an opera or ballet performance are also specific to the performance and all musicians need to have the same information, for example, about cuts or nuances. All musicians do not attend all rehearsals, and different musicians play different performances. Whereas when rehearsing for a concert usually only those musicians who will play at the concert participate, therefore having a common part is not necessary in the same way.

With photocopies it is easier to use personal markings as NS described above. Therefore nowadays it is not always necessary to read other harpist's markings as it was earlier. KV says that it is very common for harpists to photocopy and save parts to keep their markings for the next time they play the same piece. It reduces the amount of work and time required to mark a part. It also captures the experience of problem-solving in the part, since a good solution for a musical or technical problem is good to save for future use. It must be remembered that photocopying a part is not always legal. However, today these legal considerations can be overcome with the ease of buying parts for personal copies. It is not uncommon for harpists to have personal libraries with collections of photocopied parts.

There are traditionally-used editions, and parts edited and published by harpists. A Russian example NS refers to is the Zabel cadenza to *Swan Lake* that is played at the Mariinsky theatre in St Petersburg. She states that this version has no resemblance to the original version by Tchaikovsky. At the Bolshoi a version close to Tchaikovsky's original version has always been used. Thus different versions of parts can be used in similar orchestras in the same country. As another example, the version of the cadenza in *The Nutcracker* by Tchaikovsky used at the Bolshoi today is Dulova's edition of Zabel's version. Also, KV notes that these different editions are not necessarily transferrable to another orchestral context, but associated with specific orchestras.

> Maria Kruschevskaya was coaching the ballet orchestral parts and she gave them material that they use in the Bolshoi. One of my students at the academy played along with it playing *Swan Lake* and I said that 'you can't play that for your audition. The only time you will play that version is if you are auditioning with the Bolshoi' and she laughed. I said 'no you have to get the normal one because this is just for the Bolshoi' so I know it's quite different. (KV)

Thus parts that have different editions, or different traditions, may be required for auditions. It is often important that the part used is in the tradition of the particular orchestra.

Problems arise occasionally due to the ignorance of composers regarding how to write for the harp and how the harp works technically. They may write parts that are not playable or are very difficult, or parts that cannot be heard due to the orchestration. The problems concern both technical issues and musical issues. Some composers who write similar parts for harp and piano are not aware of the differences and this may make the harp part difficult to play, or the marking or editing of the part difficult. The interviewees observe that composer ignorance is partly due to scarcity of information about the harp in books on orchestration. But there have been composers who have a great understanding of the instrument's possibilities occasionally writing impossible parts as AL describes:

> AL: [When] you play Richard Strauss, you play some[thing] very unpleasant. But if you read the book, the great book by Berlioz the big *Tractate of orchestration and instrumentation,* the [preface] is written by Richard Strauss. Very interesting, and very important, and very, very clever thinking about the harp. But he wrote… in his works you can find everything: for example in *Don Giovanni* you see passages that were written for piano with ten notes and a lot of that. You know that composer Mahler and in *6th Symphony*: terrible thing. He liked to use mediator how do you say…
>
> LL: Plectrum.
>
> AL: Plectrum yes, and it's written there, mediator, in that symphony. A lot of playing with mediator in the *3rd Symphony* for example but in the *6th* he wrote chords of five, *five* notes mediator. It is impossible. But he is a great orchestra composer, I love him and I love his music. But you can understand that even that great composer knew *nothing* about the harp.

Unidiomatic writing for harp is often identified as pianistic writing for harp, evidenced by how the chords are written. Here AL indicates pianistic writing as 'ten notes', but since a harpist only uses four fingers on each hand the fingering is difficult. NS describes two different fingerings for a similar problem in the *Rheingold* by Wagner:

> Some composers don't know, for example Wagner, he wrote for five fingers and not for four. We play at the Bolshoi *Rheingold* and at the end we play with six harps, the very

> end, and there are arpeggios. Not four but five [note patterns] in each hand. So some harpists play this with three and two, and two and three, I play four and a small jump. When you used to do something many times it works. You know I was comfortable. (NS)

Thus there is not always a single solution for reoccurring fingering problems due to unidiomatic writing. However, contemporary composers also often lack understanding even though sources of information are available in books on orchestration and through personal contact with harpists. When contemporary composers learn from earlier unidiomatic part-writing and mistakes made by earlier composers, mistakes may be repeated. NT describes how composers' mistakes could be justified by earlier mistakes or misunderstandings by composers:

> But when they get very famous they think they know better and they tell you 'but in Ravel there is a harmonic with four notes in the left hand and two in the right so if he did I can do it' (NT)

Due to mistakes that are repeated in this manner, unidiomatic parts should not be viewed only as a historical phenomenon since they also contribute to problems with contemporary music. The knowledge of idiomatic writing can also be in conflict with prevailing compositional styles. KV describes a recent contemporary project:

> We just recorded 10 young composers this weekend and it's been a nightmare just learning and getting it good enough to record. I don't think I ever played so many loud short chords for months. That's what they want: very loud and very short and not at all what the harp is good at. So I think it is a problem that sometimes the writing is very ungrateful for harp and that some of the orchestral parts are very difficult. You have to be able to cope with some of these difficult parts like Wagner, Richard Strauss, Britten, Stravinsky. (KV)

The harpists' primary approach to technical problems in parts is to spend a lot of time practising, and to devise solutions involving pedalling and enharmonic changes, which may be very time consuming. These solutions must be prepared before the rehearsal. When dealing with parts by contemporary composers it may also be possible to discuss the parts with the composer.

> I recently had an experience with a new part, on which I spent hours and hours of work. After realizing that even with many more hours it would be impossible to make it sound good I called the composer. And the composer said 'but its been played in [two major orchestras]' so I called the harpists there who told me 'No, but I never played the notes' so I told the composer 'I'm sorry but it is not possible so you have two choices; either I fake it or I rewrite it for two harps' and I rewrote it and he was very happy. The problem is if you get too much new music you get to a point where you don't care and you end up cheating instead of calling the guy. (NT)

However, NT also cautions that not all composers appreciate discussing their work. When possible, personal contact with the composer is essential for the outcome of the quality of the parts. In the past, parts have been written or changed as a result of discussions between harpist and composer. The most well known example is *The Nutcracker* cadenza for which Tchaikovsky accepted Zabel's suggestions for changes in the part as NS reports. NT observes that sometimes it is possible to see how composers try to avoid showing their ignorance of harp-pedalling by avoiding the use of accidentals in parts.

To deal with difficulties in parts harpists occasionally make changes in the parts without the consent of the composer or conductor. NS explains that one way to do this is to divide the part between first and second harp. Her example of this practice is the part for Prokofiev's *Romeo and Juliet*. Another solution is to rewrite the part if it is not possible to play. But a part of the musician's professionalism is the attitude towards changing parts. A musician does not change a part if it is not necessary. This is grounded in tradition and teaching as NS reflects:

> You know about changes, Madame Dulova used to say 'never do any changes if it is possible to play [the piece] as it is edited or written. Only if it's *absolutely impossible* then you can do something'. (NS)

Respect for the composer is important, however, the amount of work required is not always commensurate with the musical effect gained. Even playable parts that are badly orchestrated have to be considered; this is not always about technical issues but also about musical issues, as AL recounts:

> And when you play Prokofiev, I don't like to play it because there are lots of these things just terrible. And especially only your *professional pride* help me to play, make you play, what is written because in great tuttis when nobody can hear you and yourself too, you can't hear yourself. (AL)

There is always respect for the composer's work, as KV states, 'I always *try* to do what the composer wants'. But there might be a difference between what the harpist thinks the composer wants and what is written in the part. Editing a part may include trying to interpret the composer's intentions. This issue is exemplified by NT's approach to Debussy's *La Mer* in which his reasons for making changes are not technical difficulties but the musical result:

> The best example is *La Mer*, you know the glisses, the big waves. It's the first harp going up and the second going down with two notes or three notes; it would sound much better with one note on each harp going up and down. I prefer doing that but some say the he [Debussy] knew like it would sound with nails dzzz. It sounds different, not as clean, as good. My sense of what he [Debussy] wanted is different from somebody else's, so sometimes it is a dilemma. (NT)

Not knowing the composer's intentions and interpreting the part in light of the composer's apparent knowledge or ignorance of the harp presents a challenge when editing parts. The harpist's own knowledge of the instrument's possibilities, of the musical style of the composer, and general musical knowledge has to be taken into consideration.

Composers' knowledge may be related to the information available in orchestration texts.

> AL: Yes because it, there is a book by Rimsky Korsakov about orchestration, you know that book and about its small format, small size and about the harp. Rimsky Korsakov was the pupil of Guiraud. In the Rimsky Korsakov book it is about one page and a half, in Guiraud it's eight…
>
> NS: lines!
>
> AL: lines! Eight lines! And mostly they tell about glissando. How to play it. To them it's the most interesting thing. Because the glissando of the harp, it's impossible to play on other instruments. It's very special due to our pedals, due to Hochbrucker and Erard and their pedal mechanics. It's very interesting to them and I'm afraid there is only one interesting subject in the harp and still they
>
> NS: harmonics
>
> AL: Yes, and sometimes harmonics. Yes and there are still [those who] don't know the harp in composing. It's a pity and it's our grief and very often they don't know anything about the harp.

However, authors of orchestration treatises had different backgrounds and information. AL recalls that the composer Levitsky took harp classes while studying at the conservatory and that he also published a treatise in three volumes on orchestration in Russian in which the harp has an extensive chapter. Therefore his knowledge about the harp was deeper than most composers and most writers of treatises. An issue he highlights is that it is not always possible to judge the difficulty of a harp part when looking at it:

> He tells about the first playing of the harp in *Eugene Onegin*, a duet between Tatiana and Olga, and he said that it is extremely difficult and when you look at this music you get the feeling that it is simple, not very difficult. (AL)

His knowledge then emerged from his own experience as a player and not only as a composer or a writer of a treatise.

To NS the parts that appeal to a harpist are parts in which everything played has a bearing in the orchestral context. She stresses that it does not necessarily need to be soloistic but that the colour of the harp should be important in the sound of the

orchestra. When NS and AL discuss this issue it is clear that they have preferred composers due to their knowledge of orchestration.

> AL: And when you play Shostakovich you know if it is written for you one note. Sometimes not in the very good position, [or] one note piano, but you can be sure that everybody can hear you. This is the difference.
>
> NS: Very rare in tutti
>
> AL: Mainly in solo. When in tutti of course other instruments play, but it will be heard. *That* position and *that* pause or something, I don't know. *Every note* will be heard.
>
> NS: He liked in this moment to hear the colour of the harp and [that] everybody would hear [it]

Thus the orchestral context is more important than the part, but the personal contribution to the orchestral sound should be substantial. An unidiomatic part may be appealing to a harpist when viewed from the perspective of the whole piece.

If possible a harpist always practises the parts beforehand. Sight-reading is not common unless it is unavoidable, mainly because of the difficulties doing it, especially regarding the pedal work. KV describes that in her orchestra, which frequently does commercial recordings, music often may turn up just before the recording.

> Usually you get the music when you arrive so it's sometimes quite challenging to mark it up in time for when they start recording. Sometimes they will send you a PDF. But if they send you a PDF at 11 o'clock at night they then expect you to play it perfectly at 10 o'clock the next morning. What are you going to do? Stay up all night practising? In some ways it is better to get it when you arrive and then you do what you can. (KV)

She notes that orchestral musicians in Britain usually are good sight-readers due to the short rehearsal time for concerts in Britain, and that sight-reading is emphasized in British musicians' education. Due to their ability to perform with little rehearsal time, the LSO is often used for international commercial recordings.

5.1.2 Playing in the orchestra

Orchestral working conditions include mental and physical issues, as well as practical issues. All musicians have to deal with stressful situations where they are required to perform their best. Orchestral playing can be experienced as stressful due to the importance of cooperation, as NT reflects:

> It might sound funny but to me it is more stressful to play in the orchestra than to play solo. If I fuck up while I play a concerto then its my own problem. If I do it in an orchestra I mess up the work of a hundred people. (NT)

Most of the time the individual musician in the orchestra does not have solo tasks but makes a small contribution in the orchestral context. Intrinsic to orchestral playing is that what the individual musician is playing does not seem to be obviously important most of the time, yet the part is important in the context and mistakes should not be made. As NT observes, if a pedal goes wrong for a harpist the wrong notes will be played rather than the small intonation problem another instrumentalist's mistake might cause (see 4.2). A pedal mistake for a harpist is then more audible and the consequences in the musical context are more grave. It might also be more difficult to correct a pedal mistake than the mistakes of most other instrumentalists.

Being an experienced orchestral musician does not mean that the stress of playing in the orchestra goes away. NT says that the tasks are still difficult when performing even if the piece has been played over 20 times correctly. There is always unpredictability inherent in the difficulties the individual musician experiences in the orchestral context, which cause stress. In KV's experience being a member of an orchestra helps with nerves, since colleagues can be a support. She reckons that freelancing is worse since the musicians are playing in several different orchestras.

In some orchestral pieces the harpist must sit and wait a long time before playing. This can be a difficulty especially if the entrance is a challenging section or a solo which may cause stress. According to NS, besides being nervous due to the waiting, one of the problems is that your hands might get cold.

> You know what is difficult with those cadenzas in ballets is that you are sitting one act and then two acts and there is no possibility to warm up your hands. Madame Dulova told us how to warm up hands during the performance: you put hands on strings, your left hand on strings like this and put it firmly, and then you press firmly, and with right hand you do small exercise on these four strings for example. You get the feeling that you are playing. And then you put right hand and left (change hands). (NS)

If the hands get cold it is more difficult to play, but as described above, there are physical as well as mental ways to handle problems with waiting.

KV notes that in order to play the harp it is necessary to be physically strong, since a harpist has to be able to sit behind the harp for a long time when playing and to be able to move the harp when needed. Having sufficient strength and stamina is, of course, important for all instrumentalists. KV emphasizes that to be able to work in an orchestra it is also important to stay healthy, to eat properly, to get enough sleep and to be able to leave personal problems at home while playing.

KV notes that leaving personal problems outside is more challenging for those with young children, especially women. Orchestras that spend a lot of time on tour are harder to work in than orchestras that have a fixed venue. It is more exhausting physically to spend time on tour and is more difficult to combine with a family. KV estimates that more women work in orchestras with fixed venues due to the difficulty of combining extensive touring with a family life. The possibility of part time work in

an orchestra, which she notes is more common today, may also provide a way to spend more time with children. KV reports that she was the first mother who was hired in her orchestra.

> Yes, I think you have to leave that side of your life behind you and just concentrate on work. Actually it's harder for women to do that, especially if your child is ill or something. I was the first mother in the London Symphony Orchestra, and when they appointed me they said 'we are a bit worried about appointing somebody with a young child' … which is very sexist these days! I said 'Well if my child is sick I'll probably take time off but so would you, you are a father. If your child was sick you'd take time off wouldn't you?' 'Oh, well mm, oh yes, mm' but actually they had a wife at home to look after things you see. It was especially hard for me when my husband left when my son was only four years old. Then I was a single parent with a young child and that was really tough. (KV)

Before her there had been some female players in this orchestra but no mothers. When she was appointed she was told that this might be a problem and they were reluctant to appoint her to the position. This put her in a situation where she felt she had to prove it was possible to be a mother and a professional musician. She believes that today this is not considered to be a problem as much as it was earlier. But the difficulty of combining a family with work in an orchestra increases when the orchestra spends lot of time on tour.

Working conditions vary in different kinds of orchestras: some are situated in one venue most of the time, and others are based on touring. The regulations regarding numbers of projects or working hours that are required are different for every orchestra. The workload differs depending on which orchestra the harpist is playing with, and what kind of repertoire they are playing. NT observes that French orchestras play a lot of classic French repertoire that usually requires two harps. When playing in German orchestras that play mostly German music, harpists are not required as much due to the orchestration. This does not however describe the amount of work required, but rather how many concerts, or pieces, that the harpist is required to play. Classical French repertoire is often more idiomatic than German classical repertoire, and unidiomatic music may be very demanding to play. However, as NT stresses, contemporary music is usually very demanding.

Occasionally the composer requires the harp part to be doubled. The main concern is not to overcome technical problems in the parts, a solution described above (see 5.1.1), but to create the sound of a harp section. KV observes that the sound of a section playing softly is different from that of one instrument playing louder.

> Yes we quite often do [double parts]. A lot of the Russian composers would normally expect the harp parts to be doubled wouldn't they? I mean Shostakovich for instance, when his *Symphony number five* comes up it always says in the orchestration one or two harps and we always say we need two, not so much for volume but because the sound is

> so much richer with two harps. Two harps playing softly can come through in the texture, but if you are alone you have to play louder. (KV)

However, it is not unusual to try to reduce costs by not hiring a harpist to play a second harp part even if it is an individual part, especially for children's concerts. KV emphasizes that she and her colleague in the section usually do not accept this practice.

> Well you normally have to make a fuss about it when they try to reduce it. I once had to do *La Mer* on one harp because we were on tour and it was the only piece in the tour that needed two. I did do it, but you see that that's dangerous because then they can say 'But you've done it on one harp before'. (KV)

Another concern with reducing parts was what KV describes as collegial concern since to reduce a part means that colleagues are not getting work they could have had. NT, who works in a major national orchestra, claims that it would be unthinkable to reduce parts in this way in his orchestra since they have to set the standards as a major national orchestra.

> NT: I once had to do *Fantastique* with one harp because the second harp was not showing up for the rehearsal, but that didn't happen at the concert no. Whenever there are two harps… But I've done like *Afternoon of a Faun* on one harp.
>
> LL: But that works
>
> NT: It could work, but if it is written for two I tell them 'If we don't do it, who's going to do it with two harps?' No way we are going to reduce the harps.

Occasionally when there is a second harp available for the concert it sometimes doubles the loud passages in pieces that are written for one harp. A second harp is seldom hired only to double, but if available it is considered a possibility. NT and KV both discuss this practice in which the second doubles the first in Mussorgsky's *Pictures at an Exhibition* whereas otherwise the second harp only plays in the last movement. NT argues that it is not necessary to book a harpist to double a part if it is not heard:

> But we do not book somebody for doubling something that is not needed, like some Wagner overture, Nürnberg, the *Meistersinger from Nürnberg*. It is usually doubled but it says only one harp. One harp is not heard but six harps would not be heard either: so it would be stupid to book two. It is not for budget reasons, if it is just a visual impact to have six harps in Wagner when you only going to hear the first one with the solo and the rest is covered most of the time. Of course it depends on which excerpt. (NT)

Doubling of a part thus should not be done without considering the effect. As is evident from the quote above, the orchestration determines the result gained by doubling a part. Even with independent parts the result is not always musically relevant. This

statement from NT can also be regarded as a comment on orchestration since, as he claimed earlier, in his orchestra the practice is not to reduce parts.

As described above (see 5.1.1), harpists usually prepare and practise their parts before the first rehearsal which impacts their experience of rehearsal work itself. NT notes that while he is well prepared before the first rehearsal, on the first day he has to listen to other musicians sight-reading, and it is not until the second or third rehearsal that he finds the work interesting. This is, of course, dependent on the orchestra, the piece and the particular part. He claims that different orchestras have different traditions regarding how prepared the musicians are before the first rehearsal; he also claims that these preparation differences can be national differences. On the other hand, for NT, with a new piece it may be a boon to have the time to rehearse together with the orchestra on the first day. Thus, a working situation in which other musicians may come to the orchestra less prepared than the harpist does not affect the harpist's need to mark and know the part beforehand.

The playability of orchestral parts is dependent on the tempo. This is related to how the composer wrote the part since it might not be possible to play the part in a quick tempo. It may be that it is not possible to play the part in the composer's prescribed tempo, or in the conductor's chosen tempo as both KV and NS observe. A good conductor can choose a tempo that makes the part playable and sound good.

> In *The Nutcracker*, the beginning of the second act is very difficult if the tempo is very fast. If the tempo is very fast at the beginning of second act (singing), sometimes we even cut some of these notes because you have no time to play all of these. Some conductors conduct in two and too fast. But Rozhdestvensky he conducted in six and we managed to play everything. And another conductor he did not conduct in six but he did a little bit slower in two and we managed to play everything. Preferably to play everything. (NS)

It is important that it is possible to play the part well in any context. The conductor's knowledge and experience make it possible for the individual musician to perform well. The conductor must know the score and the problems and possibilities of the different instruments in the orchestra. NS' quote above demonstrates that parts are interpreted differently in different tempi. If the tempo is too fast it is not possible for the harpists to play what is written.

Practical issues are associated with the organization of a specific orchestra. For example, which harps are used depends upon the orchestra. KV reports that in her orchestra they use privately-owned instruments, but that the orchestra usually transports the instruments. When he gained his position, NT chose his instrument, and the orchestra bought the instrument he required. Different brands of harps have different spacing between the strings, different sizes, and different tone colour. To have a harp the harpist is comfortable with is important. There are also practical issues depending on the situation. NT and KV both note that touring can present problems for harpists, since

the harps are often transported separately and there are not always opportunities to practise, to warm up, or even to tune before concerts.

Some aspects of working conditions depend on which instruments the musicians play in the orchestra. There are few harp positions in orchestras, since there are normally only one or two harpists required. KV notes that it is also becoming more common that harp positions are not filled; rather, orchestras depend on freelance harpists.

5.1.3 Learning as a student

When educating harpists, educational institutions give differing priority to the knowledge of orchestral playing. In Russia, education is not mainly focused upon becoming an orchestral musician; the primary goal of academy education is to produce good soloists. AL states that students get very little orchestral playing experience when studying. Neither is much done to prepare for working in an orchestra as a profession. The options for gaining orchestral plying experience while studying at the academy are often scarce. AL describes her educational experiences:

> Because we have only one orchestra in at the conservatory, for example, and I studied there for five years and had never had the possibility to play in an orchestra because we had a lot of harpists and only two places in orchestra. So everybody wanted but I had no chance, but at schools almost there are no possibilities for there are not enough repertoire for the small, for child in orchestra. And sometimes when you are graduated from the conservatory or academy, you have no, just quite *no* experience for the orchestra. (AL)

But as NS stresses, this is this changing in education today, and students get orchestral playing experience although maybe not enough. KV explains that currently, at the academy where she is Head of Department, harp students are exposed to different kinds of music-making.

> KV: We have orchestral classes at the Academy and I have teachers come in to coach orchestral repertoire. I'm Head of the Harp Department, as I think you know, and I have teachers coming in to do contemporary repertoire, and I have an opera coach, and an early music coach, and they all work with students on all sorts of difficulties. They have to take exams in all orchestral and contemporary repertoire and they have jazz classes as well. So they get quite a lot of exposure to a lot of different skills as students. Then there are loads of orchestras within the Academy, and I have to decide who is going to play for each project. I try to make sure that everybody gets a fair share of all projects, symphony orchestras, concert orchestras opera, composers' workshops. Then there are repertoire sessions with the wind, brass and the percussion. I've added the harp as well for more repertoire experience.
>
> LL: They've got different coaches for opera and for orchestra music?

KV: Yes

LL: So what do they do that is different?

KV: Well quite often when you do auditions you have to do a mixture of orchestra work and opera, they might ask for instance for 'Liebestod' from *Tristan*, so they can go to those tutors for specific opera repertoire if they want, or there are orchestral tutors as well.

In this academy the teachers' specialized knowledge is acknowledged, even within orchestral skills since there are different coaches for orchestral music and opera. There are also repertoire sessions for instrument groups and KV has decided to have the harp join the wind, brass and percussion group. Her aim is that all students should get experience equally and play in the different orchestras and projects. NT expresses some ambivalence to training students as orchestral musicians during their education. His ambivalence is due to the amount of work required to become good musicians. He also notes that an interest in orchestral playing may emerge after graduation.

The education system may also promote specific knowledge required for orchestral playing. For example, sight-reading is emphasized in the British education system:

KV: Sight-read, you have to practice to sight read, make sure you read something new every day so that you get used to it. I make my students do that and it also forms a part of our exams, sight-reading. Right from the little ones, you know we have a system of grades? That goes from grade one to eight and in every one of these exams you have to sight read. So it's from when they are very little they learn to do it and there's material to help with it. I think that it is very important that they should be able to read well.

LL: How to they manage the pedals when they don't write them out?

KV: In the exams the pedals are usually written.

Good sight-reading ability is also required as a skill in British orchestras due to short rehearsal times as described by KV (see 5.1.1).

In Russia, the cadenzas from Russian ballets form a canon that students learn. Auditions for positions at the Bolshoi usually include playing cadenzas. When NS auditioned for the Bolshoi, cadenzas were an important part. Sight-reading was not required but difficult extracts from ballets and operas were required. NS recalls how she, as a beginning orchestral player, learnt to play in the orchestra:

[My experience] was very small, but when I came they put me immediately in everything and it was good. I remember playing *Giselle,* never knew the ballet, never heard it, and they especially asked the girl who was the second harp to sit near me and tell me when to play and of course conductor showed me. I played the first act nothing not really difficult, but the second act starts with solo harp arpeggios that goes (singing), nothing

> difficult but I didn't know that and when I heard I was playing alone I thought I was wrong. I was so shocked that I even stopped for a moment and she said ' continue, play, play, play'. (NS)

Thus at the Bolshoi, the harpists who won the positions were excellent players but in this case NS' lack of orchestral experience was taken into account and she was apprenticed into the profession.

Teachers teach out of their own experience, they incorporate what they were lacking in their education and later discovered was needed when working. For example, AL brought her experiences of writing harp cadenzas to connect movements and in pieces, as described in the section about sharing knowledge with the colleagues below (see 5.3.2), into her own teaching.

Often students are required to acquire experience outside of the education system. KV emphasizes the need to get experience in order to become a good orchestral player. She encourages her students to play with amateur orchestras and school orchestras. Learning orchestral playing is dependent on the experience of playing in the orchestra, not only to simply be able to play the parts. As a student it is important to gain experience, something that is stressed by NT:

> And I tell everybody [my students who say] 'but I don't need to play that, I know exactly what its going to be' 'No you don't unless you have been there and done it. It is different'. (NT)

Playing with an amateur orchestra in which students are able to rehearse pieces over and over again may prove useful for their future work, since professional orchestras rarely offer the opportunity to rehearse in the same way.

> To young people who have to play an important excerpt for the first time and they [the amateur orchestra] do over and over again for instance the opening of the ball [in *Symphonie Fantastique*] I am telling 'you are lucky to do it 20 times until it works for everyone, because when you go to an professional orchestra they usually do a run through and that is it'. Actually you need 20 times just to listen to what is important and adapt. It is a good chance when you actually rehearse a new piece when you are young. (NT)

NT describes how playing with an amateur orchestra is more difficult than playing with a professional orchestra due to the orchestral skills of the performers. NT also says that a musician who has experience of playing a piece in an orchestral context plays the piece differently at an audition. Learning a part by playing it with a recording is very different from playing it with an orchestra. Getting experience is something that might be emphasized by teachers, something the informants have experience of as students and as teachers.

> When I was in school in New York Nancy Allen said: 'Whenever you can, play in orchestra even if it is a small gig like not paid and you are playing with postmen or

> Association of Firemen of New York. Do it even for free. If you have played once the *Symphonie Fantastique* you will play it different in an audition'. And it's something I tell students now [when they say] 'If it's not paid I should refuse, I should not go' and I try to tell them, 'Get the experience'. (NT)

Teachers can thus emphasize the importance of getting experience and the advantages of getting it during one's education, however students may not understand or may have different priorities during their education.

KV says that a student should learn to play second harp parts because that is probably what she or he has to play when starting out in the profession. Knowing the first parts is important for auditions, but a musician often gets into the profession as a second player. She also tells her students that behaviour as a second player often is as important as being a good player.

> Well, I need to choose somebody who is a very good player, who is also nice to work with [when she chooses a second harp]. That is very important and I tell my students 'you are probably going to get asked to play second before you get a chance to play first harp, so you must know the second harp parts on things like the *Fantastic Symphony*, *Force of Destiny*. It's all very well practising for auditions but you'll probably get asked to play the second part of *l'Après-midi* [*Prélude à l'Après-midi d'un Faune*] or *La Mer* or *The Planets* which is hard for second harp. They need to know those parts as well and I say to them 'It's not just how you play them, it's how you behave as well'. There is a joke in the profession: 'A good second player will get the tea in the coffee break' (laughter), they have to run off to get you a cup of tea. That's just a sort of joke but how they behave and if they are supportive is as important as how they play. (KV)

It includes knowing the dress code for the specific orchestra or other behavioural details that might be important. Getting experience is not just about playing. But there is also a process of selecting who will get the experience. To go from being a student to start playing in a professional orchestra is very demanding:

> I say to them 'you will get a chance to play because somebody is sick or something's happened'. I said 'you will get a chance but if they ask you *back*, that is up to you. If they ask you *back* you know you did it well'. (KV)

To have the possibility of getting professional experience can be dependent on the specific situation such as the student's ability, previous experience and the work context.

NS observes that to play any instrument well is difficult and all instruments have specific intrinsic difficulties. The length and the quality of one's education is always important.

> Yes, you know that pedals are not separated from the whole score. Of course pedals is difficult to edit. But when you start to play the harp you start to use pedals, so harpists

> use pedals for a long time. When harpists start to drive auto, the car, the teacher says 'I don't believe that you are right for the first time' because we are very good with pedals (laughter). (NS)

NS thus differentiates between difficulties with marking the pedals and playing the instrument. Marking the part is an instrument-specific problem. To use pedals is knowledge that can be internalized.

When studying, students often prepare for a career as a soloist, yet working in an orchestra is different from being a soloist. But as NS and AL assert, it should not be forgotten that orchestral work is a way of earning a living as a musician.

> We are the students, I mean we both, are students of Vera Dulova. She was a great soloist, but she always taught that your piece of bread and butter she earned at the theatre. And this is not the only reason why she was a great professional orchestra player. She was devoted. She was very disciplined with everything. (AL)

Madame Dulova trained a generation of harpists and, at the Bolshoi, traditions from her teaching and playing are evident still, including her tradition of rules, behaviour, and attitudes. At the Bolshoi, these traditions and rules provided common reference points for the musicians and unity in their approach to the orchestral profession. As seen in the quote above, as a teacher, Madame Dulova was a role model as an orchestral player. However, education in the academy gave little emphasis on orchestral practice for the students.

5.2 The space

'Space' is here understood as physical location regarding placement and instrument, interpretive freedom to express oneself as a musician in the orchestral context, and interpretive freedom regarding the position in the orchestra.

5.2.1 Physical space

What a musician can hear and see depends on one's location in the room. In a symphony orchestra the harp often is placed behind the first violins. NT notes that when the harp plays together with the double bass from this position, they are very far away from each other and cannot always hear each other clearly. However, orchestras have different traditions of where the harp is placed. NS states where she prefers to sit and why:

NS: You know it is very important where you sit because when you sit near to woodwinds and to the right are strings you can hear perfectly well all instruments, and when they put you behind strings like in some symphony orchestras…

LL: …behind first violins

NS: Yes it's a bad position. The best position is in the middle, not exactly in the middle, but between woodwinds and strings. Especially it is important in *Swan Lake* you should accompany cello and oboe and violin and you should be together with all other instruments. *This* is the best position.

The practice of more central placement at the Bolshoi may derive from ballet repertoire in which the harp has a more central role. Sitting at the back where one cannot see or hear clearly is a problem.

KV: And then there is the problem about where they put you in the orchestra, and Bryn [the principal] and I like to be near the wind so we sit on the violin side of the orchestra and hopefully next to the flutes.

LL: In the middle?

KV: In the middle yes, but sometimes there isn't space for that so we get pushed further back. I think that's a problem with harps, if they keep pushing you further and further back you are miles away from the conductor.

To be placed behind first violins can be problematic, but KV says it might help if the harpists are put on boxes since it is then easier to see the conductor. She also stresses that visual problems are not unique to harpists in the orchestra. To be seated in a place where hearing is distorted by loud instruments such as brass or percussion is also a problem.

NS recalls an attempt to move the harps from the pit to make them more visible that did not work out:

LL: Six harps. Do you have place for it in the orchestra?

NS: We have a special podium, and in the very end of the pit they put this special podium. And six harps in one row. First the conductor thought to put a large (podium) somewhere over (by the stage) but it was absolutely impossible for ensemble to play together. Then they put it in the pit, there was room for six harps.

LL: Is it difficult to get it together, six harps?

NS: You mean ensemble. No, if you have a conductor. And of course listen to each other. We were very close. Just maybe this [distance] between (showing about a half a metre).

Thus the placement in the pit and the distance between the instruments are important for the ensemble playing. She also recalls that the staff who had to move the harps and the podium were not satisfied with the situation.

A harpist needs to look at the instrument more than most other musicians. It is not possible to feel what one is playing as a flute player can, for example. A great deal of practise is needed to be able to place the fingers without looking, but harpists sometimes need to look at their fingers for placing.

> If you are a flute player you've got your [flute here], you [can] feel what you are doing on your instrument and your music is there, and the conductor is straight ahead. But if you are a harpist your music is there, the harp is here and the conductor somewhere over there. So I think that is quite a big problem when you play in orchestra. And I think it is important when you practise sight-reading or whatever that you try not [to] keep looking back at the harp. (KV)

As in KV's description, turning the head to look at the strings is a problem that must be consciously considered when practising. Her choice of illustrating this with sight-reading may emphasize the difficulty various visual points pose when playing in the orchestra, since sight-reading may also be impacted by other problems such as fingerings, pedalling and enharmonic changes. It might be helpful to be able to reduce one difficulty, and it is important to be able to see the conductor.

NS emphasizes that when playing in an orchestra, the harpist must be aware of several visual issues. These visual points all have different distances and directions.

> Yes, you know to play harp in orchestra it is really difficult. You should control your fingers with the edge of the right eye, you should look in the score and you should watch the conductor. (NS)

Handling the three visual points is important for a harpist. How to handle them is influenced by placement in the orchestra. When playing in an orchestra, as opposed to playing solo, there are three positions for one's eyes. AL stresses that it is important to see the strings, it is important to see the part and it is important to see the conductor. The harpists interviewed shared ways of overcoming these problems. NS recommends that orchestral harpists practise playing as much as possible without looking at their hands, and that sometimes extracts from parts have to be memorized in order to make it possible to look at the conductor while playing. KV adds that when harpists get older and need glasses it might be more difficult to see these three points at different distances clearly, especially in a dark pit.

5.2.2 Musical interpretive space

An individual musician often has limited possibilities for influencing the situation in the orchestra. The musical space in which to perform is limited by the score, the interpretation, and the conductor as well as other things. NS describes differences between orchestral playing and solo playing: in solo playing it is often possible to handle problems more easily such as when feeling nervous.

> …especially when you play cadenzas, not only cadenzas. Yes I told you that we always listened to what was going on around the harp but the cadenza is really another [thing]. When you play recitals [you have] a lot of possibilities: if you are not good in one piece, if you are nervous then you relax to the next one and you'll be better, better, better. Here you have just one very small possibility as maybe 30 seconds or one minute, one and a half and you should be absolutely perfect because all musicians listen to you. Each musician knows every note. (NS)

The orchestral musician has more restrictions as to when and how to play. A soloist can adapt his or her playing to the situation to a greater extent than is possible in an orchestral situation. The mental, physical and technical preparation required for orchestral plying is different from that for solo playing. AL says that it is not only the handling of musical or technical problems that differs between solo playing and orchestral playing; an interest in the specific fields of knowledge that are required in the orchestra and an emotional interest in orchestral playing are also important.

> AL: Of course you must have a special brain, you must have the special ears, and of course a great *wish* to play in an ensemble.
>
> LL: What do you mean by special brain?
>
> AL: Special brain, you know to play something very, very difficult. I mean technical[ly] solo and orchestra is quite different. Because there on the stage where you are alone you can play this way or this way. You can change a tempo for example if it is especially difficult, or not to play so loud because it's a little bit easier. But in orchestra you *must* play what your conductor wants and what your colleagues are doing while this time. And so it is of course different because sometimes you begin some very difficult piece but suddenly your conductor wants to play with a great accelerando and you are not ready to do that. It is possible to do it on the stage if you are a soloist. So of course you must bring a very good reaction and it depends on your brain of course.

Attention to things going on outside oneself, such as the input from the orchestra and the conductor, must take precedence over the musical focus on one's own playing when playing in an orchestra. There are other differences between playing solo and playing in an orchestra, for example, nuances have to be considered in relation to the orchestral context and not only in relation to the instrument as when playing solo. KV describes

this relationship to the aural orchestral context as well as to one's knowledge of the part and the score.

> Because really when you see piano, pianissimo in orchestra that usually means that the harp can be *heard*. Because if the overall dynamic is piano, pianissimo, that is when the harp comes through so it doesn't mean you can play softly. It usually means that you can be *heard.* (KV)

It is very rare to play soft nuances in the orchestra. KV also notes that a musician must be aware of the fact that nuances must be thought about differently when playing solo and when playing in an orchestra. The way of thinking about nuances for a specific instrument has to be considered with the score and the whole orchestra in mind. In an orchestra one is working in a hierarchical situation where one should be able to express oneself as a musician. The challenge is to be able to use the room that has been given.

> LL: You know in cadenzas, do you have the freedom as a musician?
>
> NS: No, not absolutely you know for example *Raymonda Variation,* it is accompanying the ballerina's dance so you should be strictly with the conductor. But of course not emphasize each beat because you should create a small piece, but you should watch each beat, so you should play by heart and with the conductor. Sometimes you have freedom but you have certain [limited] time. In this certain time you have small freedom and you can interpret the music as you understand. In this small space you do something. It is a possibility and still you have it.
>
> LL: And you can use it in full
>
> NS: Da, you can use it in full; the possibility to be brilliant or to fail.

As noted, the freedom to perform has limitations. The musical freedom of the cadenza is limited by the action on stage, but at the same time the musician's performance should also demonstrate artistic independence. But, as experienced by NS, it is not only cadenzas that offer opportunities for personal interpretation. This is an issue that is recognized also by NT.

> I think it's… like you are free and not free. It's exactly that. You have two bars and you can move them, you can say something. You think; the time[ing], the sound or whatsoever. (NT)

But this freedom is also limited by the conductor who has the power of distributing the possibility of personal interpretation to the musicians. In ballets this freedom is also limited by the action on stage. The conductor is the main person for giving musical freedom to the musicians.

> But once again it depends on who is the conductor, the best conductor is going to listen to you and others can show you. If you have somebody who trusts you, who knows you, it's a dream because they follow you when you are the one who has to lead at this point. Then you are free. (NT)

Thus, a conductor who recognizes the musician's ability is preferred. The constraints are not only playing constraints; they might also include the choice of repertoire.

> I think it is very rewarding to play in an orchestra but you have to play what you are paid to play and most of the time you are not enjoying it. (KV)

As a part of creating a musical interpretive space all musicians interviewed often play in other contexts, such as chamber music and solo recitals, outside of their orchestral positions. They may also be involved in other musical activities. KV, for example, has an extensive career as an educator.

5.2.3 Orchestral position and musical interpretive space

Depending on the musician's position in the orchestra, different characteristics are required. These include not only technical and professional characteristics but also personality, intellectual, experience, and emotional matters. AL observes how playing second harp is different from playing first harp:

> When playing the second harp you must adapt to the first harp with the timbre, the timing, the volume, and the sound. The second should not play early or late but adapt to the timing of the first harp. (AL)

Thus the second harp basically has a different role in the orchestra even when the second harpist plays an independent part. Most musical decisions are dependent on the choices of the first harp even when the two are not playing in unison or at the same time. NS says that she considers playing second harp to be more difficult than playing first harp since the second harp always has to follow the first harpist's decisions and always has the responsibility of playing together with the first harp. Inexperienced harpists, or young harpists, sometimes have difficulties adapting in the harp section when playing second harp because they are too concerned with their own playing. They are often ambitious to display their own musical and technical knowledge in front of the orchestra and the conductor rather than adapting to the section and the orchestra. In the interview with AL and NS a discussion of the requirements of the second harpist emerged:

> AL: They have to learn to listen and *want*, they first of all, they must *want* to play with you. Because they can hear and listen too but they, if they feel themselves like a soloist so it will be a problem for ensemble. Of course, it's a problem.

NS: And there are some harpists who are really born to be a very good second harp.

AL: Special talent, it's very difficult.

LL: What could that be, what qualities should they have?

AL: I think it's like in a marriage (laughter) something like that because you must think about the other, yes, and not only about yourself and not only about your sense and your attitude too towards everything.

NS: Yes and you should also be able to hide your personality.

AL: And ambition.

There should be professional trust between the first harp and the second harp. NS and AL say that there are second players whom they trust more than others. It is also important to consider one's image as a musician and the position in the ensemble. To be a second player requires a different position image than that of the first player. NT describes himself as a first harpist and thinks that he would not do as good work as a second harpist even though he has played second harp previously in his career. It is important to him to have the musical freedom to make the decisions that come with the role of first harp.

> If you are second harp you have to be with the first no matter what even if your feeling of music is different. And for me it is if I sense I want to play there even if I'm wrong I *want* to do it and being able to. (NT)

The second harp always has to follow the musical intentions of the first harp. The first harp also has to be able to trust the second harp without having to change the interpretation due to the second's inability to follow. NT indicates that they have to be able to feel the music in the same way.

> Hopefully we'll feel the music the same way. It would be a nightmare to play a chord unbroken because… Somebody told me that since she had this person who played the second harp, she could never play a solid chord together so she had to break everything. That is a nightmare if you have to work with somebody like that. (NT)

Thus the hierarchical system does not always work since all musicians are dependent on each other. In addition, the inability to understand musical intentions creates a lack of trust.

Common musical understanding can be developed through extensive experience playing together in the same roles. The second harpist not only has to listen to the first harp but also has to interpret the harpist's movements.

> I am amazed that some people can play with me [because] actually I don't make big signs, I try to be demonstrative for second harp when it's two harps but I usually assume that it is her job to play with me. (NT)

The trust between the first and the second harp is based on communication, and on the hierarchical positions. Although NT usually plays the first harp he would consider playing second if it was an occasion he was interested in participating in, like playing second harp to a first harpist he would like to work with or to have the opportunity to play with a particular conductor or soloist.

Playing second harp is different from playing first harp. As a first player one must make decisions and play soloistically. As a second player one must blend in with the timing, volume and tone of the first harp. Occasionally second harp parts have a solo passage or independent role and the quick change of role can be challenging. KV is the co principal, where she has to change between the roles of being first and second.

> If there are two of us Bryn [the principal] plays first and I second. If he is not there I play first and have to switch into making my own decisions. And you know playing first is different because it is more soloistic don't you. You have to make the decisions, especially if you have a second player. It is quite hard coming from second harp and fitting in to making the decisions for somebody else. I think it is quite hard. (KV)

Thus there may be challenges, not only in changing roles within the second harp position but also in changing between first harp and second harp.

A second harp is a good player who also is nice to work with. KV states that as a first player you want a second harp that is supportive musically and as a colleague and someone you do not feel is critical or makes you nervous by his or her behaviour. Since the first harp is responsible for the section he or she does not want a second harp arguing with his or her decisions. If a second harp is hired then he or she has to be a good musician, and also needs to have the social skills that the first harp appreciates. Hiring a second harpist is done differently in different orchestras. KV reports that in her orchestra, which has two harpists but is freelance-based, when an extra harpist is needed the choice of who plays second is usually up to the first harpist.

5.3 The people in the orchestra

Of the many people involved in orchestras, interviewees shared most about conductors and colleagues. In the sections on colleagues the focus is on how knowledge is transmitted between colleagues and on the colleagues as an audience for the musicians in the orchestra.

5.3.1 The conductor

In an orchestra there is a decision-making hierarchy, and all individual musicians have limitations as to how, what and when they are allowed to perform. The conductor is responsible for the musical interpretation and also responsible for managing work at rehearsals and in concerts. A musician in an orchestra must adapt to the musical context, which the conductor coordinates. AL shares from experiences of performing for ballet:

> But when you play in orchestra or ballet you almost never can take the last chord when you want because you must wait for her [the ballerina's] leg, for her arm, for every part of her body and you are waiting for that every one of her movement. And sometimes you play a very difficult piece, almost solo piece but you can't play it yourself because you depend, you know the conductor is like a mirror. You can't see her and she's on stage and behind, you *must* look at the conductor. (AL)

When playing ballet or opera, it is important to adapt to what is happening on stage. The conductor has a different role than in a symphony orchestra where it is sometimes possible to give the individual musicians more freedom. The hierarchical layers are different with works for stage.

Experienced conductors may also understand what the individual part requires and what the individual musician needs to play the part as well as possible. NS states that a conductor's choice of tempo and how the conductor chooses to conduct can help the musicians perform their best.

> NS: All conductors are different of course but if you are sure that you are good, then they feel it.
>
> LL: They trust you
>
> NS: They trust. I know some problems with conductors, if you have some question you can only during the intermission ask for something. I remember for example: The variation from *Raymonda* is in two, but for harpists and for ballerinas it is better to conduct in four, and I used to play with the conductor who staged it in four. Then another one came and started conduct in two and when I said 'maybe we can do it like this' he was not satisfied with my request. But then after a while he started in four.

In this example the first conductor was aware of how to could support the musicians and the dancers. The second conductor came to understand during the process, where he at first did not change the conducting pattern at first after the request from the musician, but did change after conducting some performances. The conductor's choice of tempo also affects the interpretation of the part, as noted regarding *The Nutcracker* in 5.1.2. NS asserts that a musician must count bars in order to know where he or she is in the music and know the music well. A musician is always responsible for his or her

own actions. A musician cannot trust the conductor to give the information needed. Even if a cue has been given in rehearsal it may not always be given; the musician has to know for herself or himself. NS mentions that sometimes in rehearsals harpists may have a problem with setting pedals in time, whereas other musicians can start playing directly at the bar requested. Conductors are not always aware of this problem.

The conductor is very central for the experience. The conductor's knowledge, charisma, and authority are important. Good conductors often stand out as central to the orchestral experience as KV recalls:

> Some of the people I have worked with have been wonderful so I've enjoyed that very much. But there have been a lot of conductors that have been mean and I feel I've had enough of that. And also when you have played the French repertoire with someone like Pierre Boulez and you have to play it *again* with somebody who doesn't understand it you just think: 'No, I don't want to play this again, I've done what I thought was the best and now they are trying to make me do it totally wrong, totally different.' (KV)

The conductors that stand out to the interviewees are often a few persons who are able to lift the orchestra as a group to a higher musical level. These conductors have good musical knowledge and are able to bring the musicians with them in their musical visions. The conductor strongly influences the musicians' working conditions, musical experience and professional experience. Orchestral musician also have musical visions formed by their earlier experiences. Therefore musicians with extensive orchestral playing experience from many years are harder for a conductor to impress. As KV relates, prior outstanding experiences with good conductors may influence the work of experienced musicians.

Although orchestral playing is contextually complex and the conductor is only a part of this context he or she is still central to the overall experience. There are often conductors that are mentioned as especially important. Their ability to mediate their musical vision is central.

> Well, I think somebody that can really carry [you] with them, that have the concept of the music, and they can sell that to you, and take you with them. I've experienced that sort of thing with people like Giulini, and Leonard Bernstein was a wonderful conductor. Bernard Haitink, Boulez, Rostropovitz on certain pieces. They have to have some charisma as well to get up in front of an orchestra of 90 people, 100 people. They have to have some authority, there must be other people I've left out! (KV)

In this quote, not only are specific conductors mentioned, but also the special competence they have for certain repertoire. NS states that at the Bolshoi they had very good conductors such as Gennadi Rozhdestvensky. As recalled above (see 5.2.1) he was aware of details in the score that enabled the musicians to perform at their best, an ability that musicians appreciate. But she reckons that even if they are very good conductors, maybe not all the conductors at the Bolshoi are internationally famous. It

should be noted, that working conditions for conductors are different in different kinds of orchestras; in a symphony orchestra a conductor is appointed for shorter productions than for ballet and opera. For example, Rozhdestvensky worked as a conductor at the Bolshoi for over four decades, even though he had several other orchestral positions during his career.

A musician must be aware of the hierarchical position he or she has in the orchestra. The hierarchy may be due to one's position in the orchestra or may be due to one's relationship with the conductor.

> Never argue with conductors, because it is useless, especially with young conductors. They try to show they are all very experienced and that they know everything. (NS)

A musician can learn how and when to discuss issues with a conductor. Arguing with the conductor at a rehearsal exposes oneself and the conductor to a situation in which it might be difficult to solve the problem. Sometimes, due to the 'unplayable' parts, tuning, or tempi that make playing difficult, the harpist feels exposed to the conductor. The harpist is exposed in the orchestra since he or she is often alone in the section. KV says that it might be easy for a conductor to choose to pick on a harpist in front of the orchestra due to the exposure and the instrument-specific problems. KV advises that usually it is better to speak with the conductor during breaks because it is easier to solve a problem then than in the rehearsal. Drawing on her long experience of orchestra playing, one approach KV takes to conductor criticism in rehearsal is to smile at the conductor. This action disarms the conductor.

> I used to worry about being bullied by conductors but now I just [think] 'what are you going to do, shoot me?' and that's nice that you don't feel so worried about what conductors think of you. (KV)

She thinks that sometimes conductors treat harpists as if they are not proper musicians, and as if harpists are stupid. As an experienced musician she is more concerned about her own standards and colleagues' continuous evaluation of her work than what a conductor thinks since the conductor is only there temporarily.

There could be reasons why conductors don't care about the harp or don't want to expose the harp musically in the orchestra. NT claims that it could be due to the conductor's own earlier experiences. If the conductor has experiences of harpists with too little orchestral experience, harpists who have problems with pedals in pieces, or harpists who lack a sense of rhythm it might dissuade him or her from being interested in the harp as an instrument in the orchestra. It could also be due to their own lack of knowledge about the instrument, a deficit that they are reluctant to expose. NT proposes that lack of experience for a musician who plays a part alone is more devastating than lack of experience for a musician who plays a tutti part. Tutti musicians can hide their lack of experience while gaining experience.

NT observes that conductors' interest in instrumentation and the possibilities of the orchestra develops with their experience. A young conductor might be more interested in his or her own performance than in the sound of the orchestra. NS notes a difference between conductors who understand the sound quality and sound possibilities of the harp in the orchestra and those who don't.

> Big, nice, deep [the Russian tone]. You know there are some conductors who like the harp and they prefer it very loud. They want to hear a lot of sound but some of them don't like it and prefer more modest sonority. (NS)

The conductor's choices can also be based on personal preferences. The preferences of the individual musicians may not always match the preferences of the conductors. When playing in the orchestra there are always choices to make. Choices have to be made, for example, regarding what other parts and instruments to listen to and how to interpret the conductor.

> Like if the conductor is bad and he looks at you. You look at him and you have to learn how to ignore what he is doing and 'yes I am really interested and sure and I am listening to the flute and I am not looking at you, but I pretend I am looking'. (NT)

The choice made here is to play together with the orchestra, one's colleagues, in order to create the best result. The specific orchestra's collective listening and experience are more important than the conductor in this situation. If the choice is between a conductor that does not meet the standards the orchestra requires and the orchestra as a collective, the musicians may choose the orchestra. However, this must be evaluated in the context since it is the resultant sound that is most important. In a situation where the outcome is dependent on the conductor, such as when performing a ballet as described above by AL (see 5.3.1), the choice is to follow the conductor.

The conductor's central role for the musical result as well as the working environment cannot be underestimated. As AL said when leaving to play the evening's performance: 'I never regret my choice of playing orchestra. But it all depends on the conductor'.

5.3.2 Sharing knowledge with colleagues

Teachers share knowledge of orchestral playing with their students (see 5.1.3). But colleagues within an orchestra and in different orchestras also share knowledge with each other. Here, this practice is described as sharable practical knowledge, such as sharing marked parts, and knowledge embedded in anecdotes or stories.

Saved copies of marked parts provide a source for collegial sharing. Sharing solutions to difficulties and mistakes in parts, or difficult pedal markings is a way to help colleagues and students. KV notes that since writing pedal markings is time consuming, keeping copies saves time and saves the harpist from doing the same work over and over

again. A good solution for a fingering could also be saved for the next time it is played since it may be difficult to remember; it could also be interesting to compare different solutions with colleagues.

> KV: Just say these 10 pieces I've done this weekend, I can show them to you (showing parts) these terrible written… I had to virtually rewrite them and there were lots of complicated rhythms, lots of fast stuff… and you need to keep your markings don't you. Look at this horrible stuff to play. If you don't keep a copy of it for next time you have to start from the beginning all over again. So I'm actually quite famous for my markings, a lot of people come to me for my markings.
>
> LL: and you are willing to …
>
> KV: Of course and I always see that my students get lots of markings. Also some of my colleagues ring me up and say 'Have you got a copy of such and such?' and 'What do you do at figure seven?'. I think that we all do that don't we, keep the markings and you don't have to start from the beginning every time.

Sharing knowledge can include contacting a colleague in another orchestra who has played the part and who is likely to have information about it as KV describes above (see 5.1.1). KV claims that they know which colleagues are willing to share information and are likely to help others. Thinking as an educator KV noticed that since it is easy to photocopy parts, it is easier for students nowadays. Students can easily get access to their teachers' markings, which make their workload different.

In NS' experience sharing markings and information is not always an easy issue. Respect for colleagues' work has to be considered.

> Once I had a very bad experience in Italy, I'll remember it for all my life. We were on tour with the ballet and the ballet was, I forgot who the composer was, but the title is *Macbeth*. It was a very, very difficult harp part with a lot of enharmonics and very tricky. I spent hours to make it comfortable and to make it playable. I wrote everything but we never used pen we always used pencil if something is wrong you can [re]write. Unfortunately not only our orchestra used these parts but also some Italian orchestra. We travelled different ways of different parts with many troupes, some with us, some with the Italian orchestra. And once it was our turn to play *Macbeth* somewhere else. When I opened the score I was shocked because all my marks were rubbed out, rubbed off, and was written absolutely different marks. So I could not immediately play because it was very difficult. And the only thing I could do, I asked conductor first to excuse me and took the part and [did] not put my own marks. I just took it and started [practising] as it was written by that harpist. So from that time I say if you saw someone marked something, never do your own reduction [edition] in already used parts. (NS)

Two orchestras used the same part. Due to different preferences for notation systems and due to lack of clarity as to which of the harpists was responsible for markings each

wrote according to their own system in the part. For NS this was a moment of learning, to respect other musicians' work and to realize the importance of respect in the situation. Probably, due to the ease of photocopying parts, this situation would be more unlikely to occur today.

It is also important that the orchestra as a collective shares the same musical vision, which can require that an individual musician discuss the part with other musicians. Context, as in position and personal matters, determines whether one can ask a colleague to follow. As NT notes, that might not be possible for a young or casual musician. Access to collegial dialogue is not a given.

NS describes other difficult situations in the orchestra where a colleague can help. For example, although this is very uncommon, in extreme situations such as sight-reading a difficult part, or when playing a rhythmically challenging part it may be possible to ask a colleague to help with counting or to be a pair of extra eyes and ears.

As demonstrated in the interviews knowledge can be shared through anecdotes, often as a humorous way to describe problems and problem-solving. It is both a way of sharing knowledge with colleagues and a way of gaining knowledge. AL recalls an experience with a singer:

> …a lot of playing for harp and one *The song of the Gypsy*, gypsy man. And only the harp is accompanying this song. Suddenly the singer, he was lucki[ly] not so close to me, he sings and I should have four bars of my own playing, and sometimes not one bar, not two but – *one and a half bar* and he enter. (AL)

In this example AL describes a recurring problem with a specific singer, and a specific part in the orchestral context. This anecdote describes a musician's working situation but also serves as a means of spreading information. When referring to this occasion, knowledge of the specific singer and piece was shared between NS and AL. They could refer to the situational problem for that part, in which one should be aware that the part may need to be adapted to the situation. It could also provide information about the singer, since it was common knowledge that this was a singer that did not always count before entrances.

Besides forming experiences of problems into anecdotes, the knowledge gained may be incorporated into one's teaching. AL shares a memory where she unexpectedly had to compose music at a rehearsal.

> And I had a very great experience when some composer, and he conducted his own work. From Asia I don't know if it was maybe Uzbekistan or Kyrgyzstan or something, Asia. And we played something very strange, and okay you must [play] it, and I see in my part only one word in an empty bar. It is written above it *cadenza* that's all. And I was waiting for somebody to play a cadenza. And he stopped the orchestra and 'the harp why do you not play' I told him 'it is nothing written here' 'but you can see the word cadenza' 'yes I

> can see but no notes, no music' 'but why, you don't know how to play cadenzas' Yes, and during the interval, the pause, we created cadenzas. (AL)

This one occasion may not have had the impact it had on her teaching if a similar situation had not occurred when she was requested to write a cadenza to connect two movements in a ballet at the Bolshoi.

> But it's symphonies, but now at the ballet orchestra in the Bolshoi the conductor during the work with the *Pharaoh's daughter* he inform me very late and says 'you know, choreographer moved numbers, changed it and now we must the first connect the first one in Bb-dur, B flat major, and the next in, I don't know A major for example. [The conductor said] 'the only one way with the Russian dancers can you write [a cadenza] for tomorrow for 37 seconds'. All night I created *a masterpiece*. And in the morning very early before leaving home for the theatre my husband stood with me with a chronometer and I played something very great and he would say 'stop, it's too long' 'well now it's too short' and so we found the [perfect length]. I think for ten days I played my own masterpiece but that choreographer changed numbers again. And that was over.
>
> After that when I teach my students. I think for the future I think that they must know how to write cadenzas. Of course not for composing and not for their ambition but sometimes you must do very serious work for that playing. (AL)

The anecdotes in themselves mediate acquired knowledge, since they put knowledge in a form for sharing with colleagues. In this case it is also a resource for teaching since similar situations occurred more than once. Humour can also be used to handle the often very demanding situation in the orchestra where the possibilities for personal decisions in the situation are few. NS presents informal rules of orchestral playing:

> You know in orchestra we had very funny rules how to behave with the conductor. The first rule is that: The conductor is always right. The second: If the conductor is not right; see the first rule. (NS)

This anecdote describes problems of the working situation but also, in itself, demonstrates a way of handling the problems. The way to handle the situation includes not only the action that takes place, but also the mental approach to the situation. When colleagues tell a 'funny occasion' anecdote regarding their working situation, the anecdote often contains a problem that arose and how it was solved. It can also contain a warning or raise awareness about a certain situation, orchestral part, person or context.

5.3.3 The colleagues as an audience

Competition between musicians is sometimes an incentive to further development as a musician. A musician is always aware that his or her peers are listening. Often one's colleagues know the part played and they are able to compare the performance with

that of other performers. Working in a theatre or opera house, where several harpists play the same parts highlights the dynamics of collegial evaluation:

> … and all my life we compete. We play competition every performance because all our colleagues could listen and compare us all the time. It is really difficult. You should be better and better every time. You can't play the same all the time, you should be different. (NS)

Musical and technical improvement is an important part of professional pride. The most important audience is one's colleagues who can, and will, constantly evaluate other musicians' playing. As NT claims, most of the time the audience in the concert hall does not know exactly what goes wrong or could be better at a concert. The colleagues know. In this respect colleagues, as an audience, are more important than the concert audience and conductor since they hear and evaluate the individual musician's work over time. KV says part of the joy of playing in an orchestra is when your colleagues notice that you play well. Similarly, some performance stress comes from knowing that colleagues are listening.

NS is aware of possible negative effects of collegial competition:

> What is difficult with the Bolshoi; there are six colleagues and the relation[ship] between those are very important because when you perform together you should be sure of your partners. You need to feel good attitude. When I was a principal I tried to do everything, soften all sharp corners, to soften the atmosphere. It is very important. I think normally when you are alone in the orchestra you have no problem, no problems. (NS)

A situation where musicians compete can affect the result since it is important that the musicians trust each other. This working environment problem was acknowledged by NS, who as a principal was responsible for the section.

NT observes that it takes three or four years to prove to your colleagues that you are good, and after those years when you have proven yourself you might get to a state where you lose your sense of conscientiousness. There is always a risk of a musician losing the sense of why music mattered and becoming a 'factory worker' who does only a good enough job. An example is the musician who puts the instrument away when the summer vacation starts and does not practise or play until the next season. In some orchestras keeping up a high standard is required to keep one's job since musicians are continuously evaluated.

However, not all colleagues are seen as a presumptive audience or as skilled evaluators. The musician may choose which colleagues he or she plays for, since not all colleagues are considered important. NT develops this issue in a follow-up e-mail (personal communication, 22 December, 2014):

> It is more a question of respect: like in every society you look for the approval or respect of the ones whose judgement you value. You play for those collegues looking for their respect. (NT)

Colleagues are the most important audience for the musicians in the orchestra. They are also a source of the desire to improve as a musician. KV claims that as an experienced musician she no longer worries about what a conductor thinks about her playing, but she still cares what her colleagues think of her playing.

5.4 Aspects of quality orchestral playing

When the interviewees describe what they listen for when other harpists play in the orchestra they focus primarily on three issues: tone strength and quality, tuning, and ensemble playing. Common to all of these is a well-developed ability to listen.

5.4.1 The tone

The most important indicator of excellence is the sound, referred to as the quality of the tone. There are several aspects of quality orchestral tone: it should be loud enough, it should project, and it should have a good sound quality.

> The sound, for me that is the most important thing: the sound, the quality, the tone. Of course it has to be the right note at the right place – that is the minimum, but then it is only the sound. Projection. Quality. (NT)

From this statement it is evident that playing correctly is important and is a basis that need not be discussed when describing excellence. One aspect of the tone is the volume. For the harp to be heard in an orchestra, and in a concert hall, a loud tone is required. NS describes the working situation in a large venue:

> For example the Bolshoi is a very big theatre, it has 2000 seats, and you [want everybody] also those who are sitting very high from the stage… That everybody can hear. It develops your sound. (NS)

At the Bolshoi the harp often has a solo function due to repertoire with numerous harp cadenzas. In a solo cadenza it is important that the harp is heard. But it is not only the size of the concert hall that matters but also the size of the orchestra, and how loud the orchestra plays overall. KV asserts that there is a difference between playing in a chamber orchestra and a symphony orchestra. The orchestration and conductor's interpretation are also considerations.

> KV: It is very rare for a conductor to keep the rest of the orchestra soft enough for us to play what we think is pianissimo. So it is actually quite hard work. It is hard on your hands because you are always playing out. You always have to make a big sound.
>
> LL: Do you ever feel that you are playing the same nuances through the whole piece?
>
> KV: Different kinds of loud? (laughter) No, I wouldn't go that far. But you have to play quite loud most of the time, well certainly in my orchestra!

It is important that the harpist has the technique to be able to play loud with good quality tone. KV notes that good tone is dependent on the harpist's finger strength and stamina, since it is physically demanding to play strongly for a long time. However, NT claims that tone quality diminishes if the harpist has to overplay. If the orchestra is not able to play softly enough for the harpist to play with good quality tone when the harpist or the conductor desire that the part should be heard, the harpist might be forced to overplay.

> Some conductors are really interested in the harp so they can make everybody play softer so we can produce a sound that we think is good for the harp. Some conductors don't care so we need to play very loud if we want to be heard. Because we know it has to be heard and then we need to overplay. (NT)

What he describes here is that producing a good sound depends not only on the skill of the harpist but also on the overall skill of the orchestra, and the skill and interests of the conductor.

The tone, and the quality of the tone, are individual matters but are also characteristic of the school in which the harpist was taught, as NS relates:

> The Russian school is really famous for big and deep tone and it's about our hand position, how we articulate and how we use the sound. (NS)

There is often a professional pride in the quality of the tone and the tradition in which one was taught. What is important for harp tone quality is articulation – how the harpist uses and moves the fingers, but also the hands, wrists and arms. Articulation often features in descriptions of different schools of harp technique.

5.4.2 The tuning

Tuning is a major concern when playing in an orchestra. The harpist always has to tune before rehearsals and concerts and during breaks. NS states that all orchestras tune differently, all instruments have different tuning, and all musicians have different perceptions of tuning. When tuning the harp, choices have to be made according to what key to play in, what piece to play and how the individual instrument works. When

deciding how to tune, the harpist must consider the overall tuning of the instrument and specific important places in the piece.

> So first of all you tune in a certain tonality. And then you start to check certain very important chords and notes and some passages and to be sure that in the whole it is okay because it's never perfect in all keys. (NS)

The tuning thus has to be adapted to the piece that is played. The construction of the harp makes it impossible to have all notes tuned perfectly. NS recalls how the harp had to be tuned in the breaks of *Swan Lake* and *Sleeping Beauty* with special focus on what the different acts demanded:

> …especially you know it is very difficult to tune the last act of *Swan Lake.* It started in Des- dur then F-dur then Fes-dur so it's always something very, very tricky. And still we manage to overcome these difficulties. And I remember once the *Sleeping Beauty* has four acts and we have three intermissions many, many years ago. Then we had the possibility to tune the introduction, then the cadenza, then the third act, then the Panorama. Very famous and very difficult scene where harp plays almost solo. (NS)

She continues describing that, due to preferences in a certain performance, there were only two intermissions, which she regarded as a catastrophe since she could not tune according to the different requirements for the different acts. She was met with the comment from the conductor: '[You are] lucky, then you don't have to spend all your intermissions with tuning key. You tune once and then you tune twice, for the second part, that's all'. He did not consider the fact that she did have to spend all the intermissions tuning, even if they were fewer.

Since a harp has three different pitches on each string that are changed by the pedal mechanism, the harp has to be well regulated for all three pitches to be in tune. This is dependent on the condition of the harp and how recently it was regulated. The harp is also tuned to a tempered scale and this does not always fit with the rest of the orchestra. NS states that due to these problems it is sometimes necessary, but difficult, to tune specific strings during the performance. Conductors are not always knowledgeable about the tuning implications of the harp's design and construction.

> And the conductor is always right when he says 'harp is out of tune'. You know I had a, how to say, talk with the conductor. I won't give you the name it is not necessary. But he asked me 'tune A-flat, then A natural ok, then A-sharp. Oh it's not good, make it a little bit higher or a little bit lower'. I said 'it can be this way, *or* that way'. (NS)

If a conductor, as in this quote above, does not know that the harpist plays A-sharp, A natural and A-flat on the same string and does not understand the consequent problems that may occur, it might be difficult for the harpist, especially if the harp is not well regulated. To tune properly, a harp must be well regulated since the pedal system that

controls three tones per string will not work properly otherwise. Then the harpist has to make choices regarding which pitches are most important to have in tune.

A harpist must be aware of other players in order to be able to tune according to the tuning of other instruments. KV describes how in her orchestra tuned percussion is often at 442 whereas the grand pianos might be tuned at 440, which causes problems. Occasionally, the orchestra is required to tune to 440 but it is difficult for the orchestra to stay down and causes problems with the tuned percussion. NT describes the problem occurring when the pitch the orchestra tunes to before the rehearsal or concert is not the pitch it stays in. An orchestra that tunes at 442 might end up at 444; the harpist has to tune the harp before playing and cannot adapt to the changed tuning when playing.

> Tuning, that is the main problem because most orchestras go up during the concert unless it's a very, very, high-class [orchestra]. Most start at 442 and ends up at 444. It depends on what piece you are playing, if you play Mahler five and the important passage in the fourth movement and you tune at 442, they end up at 444 and you are not tuned and stuff like that. So for me if you want to be really in tune, share a solo with a clarinet who tends to be high, or a bassoon. You have to know which tones are going to be, tend to be high. So tuning is hard, because we cannot tune it on the spot; that is what I hate. (NT)

The knowledge of different instruments and different musicians is vital when sharing a solo or exposed passage. For a harpist it is always important to know what will be heard and with whom he or she is playing. As NT explained, notes in certain passages and instruments tend to be high, so the harpist has to adapt in an uncertain situation. Adapting to each other's tuning is part of rehearsing before a concert. NT says a harpist with extensive experience acquires the knowledge of what is important about tuning in a piece; remembering can be regarded as part of learning or re-learning the part.

The harpist has to be at the venue early to be able to tune. NS states that throughout her working life she was always one hour early to tune. KV claims that it is only possible to ask colleagues to be quiet so that the harpist can tune if the harpist is at the venue early.

> You can ask people to be quiet and let you tune as long as you turn up early enough. If I'm able to get there about 45 minutes before the rehearsal starts then I feel I can ask them to be quiet for 10 minutes when I tune. If I get there 30 minutes before you can't really, because people are really trying new reeds and all that sort of things. So I think if you are consistent, if you get there early you can expect them to be quiet, just for 10 minutes. I've got my orchestra well trained…they come in and say 'Oh, are you still tuning?' 'Yes, I need another five minutes'. Obviously you have to let them warm up as well. (KV)

Harpists' practice of arriving at the venue early to tune is partly to be sure to have a quiet environment. It is also to show respect for one's colleagues and their work. When an orchestra is on tour the harpists do not always have the opportunity to tune properly, or at all, which causes difficulties.

Electronic tuners have made preparations easier before rehearsals and concerts. But the harpist still has to arrive early before the rehearsal's or concert's start to be able to tune. However, as NS explains, tuners must be used with caution, taking into consideration the harp, the part, and which other instruments one must play in tune with. Thus the ear and knowledge of what is important in the part are more important than the exact pitch of the tuner.

KV observes that tuners have made it easier to tune two harps, since the second harp does not need to wait until the first harp has tuned before tuning but can start as soon as she or he arrives.

> We didn't have tuners when I started so then the second harp would tune a whole octave with the first, you know note by note; that's how the Russians tune, note by note with two harps. That meant that the first harp had to tune first. Now with tuning machines whoever gets there first can start to tune if you have decided on a pitch and that is a huge improvement compared the old way of doing it because sometimes when you were playing second harp you didn't have enough time to tune because the first harp took so long. (KV)

The earlier practice was that the second harp would tune after the first harp to obtain the same tuning. Now, when all harpists use tuners, it is easier for second harpists to tune well and thus play better. The section also may be more in tune, when there is not enough time for the harpists to tune together.

Tuning was described as one of the main issues that is evaluated by colleagues. The inability to adjust one's intonation while playing makes the preparation – the tuning before the concert or rehearsal – important. Experienced musicians' knowledge includes knowledge of what is important in the part, knowledge of the tuning of different instruments, and of the regulation of the harp. Tuning is therefore not about absolute pitch but is about the intonation of the instrument, knowledge about colleagues and their instruments, knowledge about the part and the score, and the tendencies that the orchestra has to change the pitch when playing.

5.4.3 Care for the whole and details

The interviewees emphasized that ensemble playing should be good. In addition to tone quality and tuning as described above (see 5.4.1; 5.4.2), good ensemble playing also depends on the musicians' care for the total orchestral result and for details in the individual musician' contribution.

Knowledge of the context in which the musician takes part is considered essential in the profession. Questions about why this composer wrote in the manner he or she did, who the composer was and if there was a reason why the piece was written this way, lead to understanding of the musical context. Sometimes this understanding emerges from non-musical sources. NS and AL recall how understanding the role of the ballerinas in Russian ballet helps explain why the ballets were written and compiled in the way they were; they obtained this information from autobiographies of dancers. In ballets, the dancers and choreographer were often more prominent than the composer. For AL and NS reading autobiographies and cultural history contributed to their understanding of the musical styles and background that influenced their interpretation and the understanding of the practices today. Since, as reported by AL, reconstruction of older ballets was also a part of the practice at the Bolshoi the musicians sometimes had to take an active part of reconstructing the music.

Score knowledge, developed through reading and listening, is important to enable the musician to experience the music as a whole and to be able to distinguish one's own position, personal and musical, from the totality of the orchestra and music. It is important to find one's role and function in the context as NS advises:

> And harpists should know and should listen to all instruments, should be in ensemble and in contact with everything that is going on. I don't mean that the harpist should know all the score as a conductor, but she or he should know with whom she is playing. What is going on, who is her/his partners at the moment, so it is very important to be in ensemble and to know everything that is going on. Not only know [their own] special part. (NS)

Thus to be able to interpret the part the musician does not only have to consider the moment and the action in the moment but the musical work as a whole.

An orchestral musician should care for the details in the orchestral context. Even if the musician has only one note to play he or she should know in what context the note is played and be able to adapt, for example, the timing and the colour to the context. It is both about preparation of the work and about listening in the context. To care for detail is to consider the musical role in light of the whole.

> The harp is not only accompanying instrument, it often plays solo lines. I don't mean solos; it's a different separate thing. But when we play opera or symphony some one or two notes are very important in the line of the whole. (NS)

In this context even a small contribution adds to the musical outcome of the whole orchestra. This means that the musician has to be aware of the whole context and at the same time be aware of the small things she or he adds to the whole context, and care about the details that contribute to the whole.

NS: You should take into consideration all previous and all what is going on. So it should be all the time in the whole context.

LL: And that is the most important?

NS: The most important. Yes. The harp is one of the instruments of the whole score. And you should listen to all other instruments. You should know where you are. And who is important and what is your place in this moment. What is your role.

NS continues by advising that it is important to prepare by reading the score, if possible, since it might help to understand one's role. But listening in the context is the most important way to understand one's role. The function of the instrument in context and the details that contribute to the whole context are most essential. Related to care for the whole and care for details is the ability to listen, developed through experience of orchestral playing.

And learn how to listen to others around you, that is basically what I've gained. First you concentrate on your notes when you are young and want to play the right notes, then your eyes to play with the conductor. It's not going to be good because nobody plays with the conductor actually. So with time you learn how to react to play something who is going to play and whom to listen to. You can play *La Valse* 25 times and still not know that in that bar you are playing with the double bassoon and not with the contra bass. So who do you listen to, for when you have a downbeat to not be early or late? It's just a matter of with age you don't I think, open your ears for timing, where you are going to play. (NT)

NT's comment that nobody plays with the conductor was said with humour, but has a grain of truth in it. The musicians' individual responsibility for the total outcome of the orchestra is important, and the conductor's action is only one part of what the musicians have to consider. NT describes progressive development in which the beginning musician is focused on playing the part right, the more experienced is concerned with following the conductor, and the next step is enhanced listening ability. The last step is knowledge as experience where the contextual role is understood.

And whom to follow and when you need to lead and when you don't. And you have to be able to do it with timing, you know that in some accompaniment the melody is going to follow you. If you have 16th notes and they have whole notes they follow you. You are the one deciding in the moment of the music at first you are like 'I'm the accompaniment, I'm not moving, I'm not doing anything' when actually you are the one who should be leading the movement. (NT)

Here NT shows the importance of knowing the function of the part and deciding what role the musician should take in relation to other instruments' parts in the orchestra. Two similar parts thus could have different functions and should be played differently.

If the context in which the part is going to be played is not known, the musician does not know how to interpret the part.

5.4.4 To expect the unexpected

Awareness of what is happening and what might happen in the orchestra is vital to orchestral musicians. Quick reaction time and being prepared to react quickly in any situation is important. It is also a skill that can be practised.

> NS: Like you drive an auto, you should be ready, at any combination.
>
> AL: Especially in Russia because we have no law, rules and things like that, like Italy in the south.
>
> NS: You should be ready for everything.
>
> AL: The same in the orchestra, I know for example in the theatre we played *Aleko*, Rachmaninov, you know the opera, the earliest, he wrote it as his diploma work when he graduated from the conservatory. It was his diploma and a lot of playing for harp and one *The song of the Gypsy*, gypsy man. And only the harp is accompanying this song. Suddenly the singer, he was lucki[ly] not so close to me, he sings and I should have four bars of my own playing, and sometimes not one bar, not two but – *one and a half bar* and he enter. So you must have brains, ears and brains to because you must react exactly.
>
> NS: Immediately
>
> AL: Immediately

This quote, an extract which was also used as an example of sharing knowledge above (see 5.3.2), reveals that an orchestral musician must always be aware of the changing situation. The abilities to react immediately to an unexpected situation and to be constantly ready for the unexpected are crucial for the orchestral musician. The skills required are the ability to listen and the ability to react. AL notes that the time it takes to react is important. If a singer, as in this anecdote, enters in the wrong place an immediate reaction and decision must be made.

Another dynamic is that a musician has to do what is requested of her or him, which may involve performing difficult tasks. NS recalls when she had to sight-read a cadenza and used her previous knowledge to assess the situation.

> Until the last moment the conductor stood by the music stand and there were no orchestral parts for me. And at the last moment when they put it I saw that it was a big, big cadenza, which I had never played. I just looked it through. I understood that it is an arpeggio arranged in a certain chord and I looked this way and just play it. I did not read, I just understood that it goes this way. I just understood the graphics of this

> cadenza. You know you should be ready for everything but also you have experience after certain years with the orchestra. (NS)

The ability to solve unexpected problems increases when the musician has experience of similar situations. In some ways it is possible to prepare for the unexpected. KV stresses the importance of constantly practising sight-reading (see 5.1.1; 5.1.3). She claims that it should be practised every day; sight-reading is emphasized in the British education.

Sometimes the unexpected situation can be something drastically different from the situation in rehearsal, thus the rehearsal preparation does not fit the performance situation as in AL's account of performing *Don Quixote.*

> …had *Don Quixote*, a lot of pieces and *Don Quixote*. And in the morning we had the rehearsal and I couldn't see who is dancing Kitri. And I was playing the famous solo variations, you know them yes? And she asked them faster and faster and faster, okay and we will play them faster. And the conductor great tempo, great, wonderful and he the conductor said 'she wants it very fast so be ready'. And in the evening, before that cadenza I was ready for something great, *a performance*, and then (singing very slow tempo) instead of that fast tempo. It appeared that the dancer who was on the rehearsal in the morning she was going to dance the next day. So you know you must be prepared for everything, *every* surprise. (AL)

Being prepared does not only include preparing the part beforehand but also being prepared for extreme situations concerning parts or the orchestral environment.

A musician must be prepared to solve problems that, while expected, cannot be predicted. A problem for harpists is breaking strings.

> It is difficult also when strings break, especially in a solo or before solos. Sometimes you can show conductor 'just wait a minute'. And sometimes when metal strings broke, such a loud sound. Everybody looked. (NS)

NS observes that sometimes this problem can be solved if the score and the conductor allow it. However, there might not be time to find the string, change the string and tune the string. Then the harpist has to play the part with a string lacking, and possibly obtain the right notes by enharmonic changes. As noted, breaking harp strings are audible, which may be heard by the audience as well as the orchestra.

NT expresses that too much conscious reflection or too much imagination could hinder the musician from performing at his or her best. To focus on what could go wrong in the moment could make the musician focus on the wrong issues and make mistakes.

The important point for the orchestral musician is to be prepared for the unexpected. Unexpected situations illustrated here include new music that had not been rehearsed before the concert, differences between rehearsal and concert, other musicians making mistakes, and playing music with strings missing.

5.4.5 To learn and improve as a professional

Professional development may occur in different ways. The development from seeing yourself as a soloist wanting to be recognized in the orchestral context to being a musician contributing to the orchestral context is one, as described above (see 5.2.2; 5.2.3). Gaining experience over time is another (see 5.1.3). When working over a long time in an orchestra the same pieces often return and there are opportunities to improve one's performance as a musician. The issues described above – tone, the tuning, and the care for the whole and details – are areas that the individual musician improves with experience and practise.

When working in an orchestra, and in a big concert hall, musicians need a sound that will match the room (see 5.4.1). The tone quality and volume are technical concerns that have to be developed in the venue in which the musician plays and the orchestra in which the musician plays. These are issues that have to be developed in the specific venue and the specific orchestra. NS asserts that the only way to improve as a musician is to practise:

> Practising, practising, practising, practising. Yes, we should practise. It's the only way, not perfect, but *confident* to feel that you have enough skill to play. (NS)

When a musician is confident in her or his own playing it means that others, conductors and colleagues, also can have confidence in the musician. KV also addresses this issue:

> Even your worst playing has to be good enough. It is hard to keep up standards, practise, really practise. (KV)

When a position is secured it is still important not to become lazy but to keep one's standard and to raise the level. A musician has to be able to keep a high and predictable level. It is important that one's lowest level is still of a high standard. Comparisons are made not only with other musicians but also with earlier performances by the same musician.

> Well I still get very nervous about doing things, but at least I know that I have done it before. You know you have more confidence because of all your experience. But you still get nervous and wonder whether you can do it *today* and I think that is one of the big pressures on a musician. I mean if there was a great recording of you playing something ten years ago you still have to be able to do it *today* (KV)

To constantly prove that one possesses the required skills both to oneself and to one's colleagues, and to keep one's standards up is very important. It might be harder to constantly prove oneself as an experienced musician than it was as a young musician. Physical problems, for example with hands and eyes, may make maintaining a high level difficult. NT explains that what one learns from experience in the orchestra is to be confident about one's own playing and, especially, to listen. Gaining one's

confidence is based on experience and NT claims: 'I think you get your confidence through the eyes of others'. Confidence includes being able to seem confident even if you are not. He also notes that humility is important for teamwork in the orchestra. Learning by listening is described as the most important part of contextual learning in an orchestra (see 5.2; 5.4).

NS notes that one part of one's practising should be to overcome technical difficulties unique to orchestral playing, such as the need to look at the hands while playing, in contrast to a soloist who can look at the hands more easily. KV describes another way to improve as an orchestral musician, which is to use the right amount of effort needed for the task to be done. An example is to be able to sight-read when required, which is a skill that has to be continuously practised. Another means of improving is to allocate time to the necessary tasks and to reduce others that are possible to reduce. As an example, having photocopies of previously played parts with markings means time does not have to be spent redoing the same work.

Becoming an orchestral musician usually involves an education in which the musician is trained mainly to become a soloist. Students might not be aware of the fact that being an orchestral musician demands different skills.

> And I remember one thing. Judy Loman when in Toronto, I was very young I was 22, I auditioned for Chicago symphony and I thought 'I'm ready to get the job', I went to Chicago and I went for the audition and she said 'Ok now you are prepared (…) You know that the worst thing for you would be that you get the job because you are not [prepared]'. And she was right I was not prepared I had not played any of the major excerpts with an orchestra, the worst thing can be to get a job when you are too young in a way. Or you have to work like crazy. I think there is an age for everything (NT)

Becoming a good orchestral musician therefore includes reconsidering one's musical role. As NT points out, interest in orchestral playing can develop after being formally educated, and that might be good. To become a good soloist during one's education may be the best way to lay a foundation for becoming a good orchestral player.

5.4.6 The joy

KV describes several different kinds of enjoyment in orchestral playing. She finds that playing music is her main joy but there are additional enjoyable aspects of playing in the orchestra.

> Well I enjoy playing in [the orchestra], being part of the whole thing, I always loved that. I love being surrounded by sound, being part of that and you know, working in a team. (KV)

What she described as one of the main joys is to be a part of the orchestra, the music and the sound and working in a team that creates music. But she also emphasizes the joy of playing great music, and the joy of working with great conductors and soloists. The educational possibility of listening to and learning from colleagues is a source of enjoyment. Working with colleagues also has a social function that is a source of enjoyment. Speaking of what provides joy also leads to discussing what is not enjoyable in the work of musicians. Having a steady job allows the musician to work with music without needing to do self-promotion or doing bookings as freelance musicians have to. Working as an orchestral musician also means always working with colleagues to play music together rather than the loneliness of a piano soloist, for example. KV has piano experience but chose the harp, preferring making music together with colleagues. A musician's performance is also rewarding when the conductor or colleagues notice that good work is done.

To be able to express oneself as a musician is vital to the orchestral experience. NS describes what she enjoys most:

> Ah, the great solos in ballet. You know then you feel that you are really a person. You are a performer. I also like to play opera especially Puccini operas or Russian operas. Harp has very important parts and I made both. But when you play a cadenza, it's a special feeling that you are alone everybody listen to you. So very special moment. But you know even the small solo or small variation, cadenza should be very well done, it could not be only notes, it should be a small piece, small but very well formed and performed. And I repeat again that when you play in the orchestra your mind, your part should be together with all others, because all of us build one thing. It's very important, not only boom, boom, boom, boom. No, it should have a certain character, a certain colour, a certain sense. (NS)

The solos, but also small details when performed well, are a source of joy. The exposure when playing alone is a source of anguish but also a source of joy.

> I like the stress, even if it is just for a little thing. It is very thrilling if you do it well and you are a part of a much bigger thing. It's great, amazing. (NT)

The joy of playing well in an orchestra could be more rewarding than playing a solo concerto. But NT claims that this also depends on the repertoire and the part: basically the part should be heard and be challenging like a cadenza in a Tchaikovsky work. But the sound of the harp together with other instruments is also important when playing a part. A well-orchestrated part is therefore interesting even if it does not have any solo passages. The teamwork of the orchestra is what makes the work interesting.

5.5 Summary

The findings from the interviews express issues of knowledge. These are related to how the musicians act in the orchestra, and also to conscious choices the musicians make. This summary addresses issues that are highlighted in the sub-questions to the research question dealing with the frames (see 1.3.2), the skills, and aspects of quality orchestral playing.

Restrictions for the musician can be seen from different angles. It might be the orchestra as an organisation, with the frames of orchestral structure and the position. The venue and placement of the musician offer other frames. The instrument in itself, with its possibilities and limitations, creates frames for the musician. The part – and the composer – also restricts the musician. The working conditions also create a framework.

'Soft frames', compared to the 'hard frames' above, are dependent on the musician himself or herself (see 1.3.2). Skills – technical and musical knowledge as well as contextual knowledge of the orchestra – also create a framework. Aspects of quality orchestral playing can be understood as highly developed contextual skills, musical skills and technical skills. Enhanced listening ability is one of the most important aspects of quality orchestral playing. To improve as a musician in the orchestra is also a sign of quality.

Within orchestral practice the musician is constrained by organizational issues, practical issues and personal issues. Several of these issues have to be negotiated by the musicians. The possibility of negotiation is determined by the individual musician and depends on personal knowledge and relationships with other musicians. Lastly, is the issue of why the knowledge was developed, which could be seen as a more personal issue. What is important from this perspective is the joy of playing in an orchestra, stemming mainly from musical and social factors. The audience, particularly one's colleagues as an audience, is important as an incentive toward developing as a musician, as well as enjoying and developing one's personal knowledge in the field.

Chapter 6.
Orchestral harpists' knowledge and learning

In Chapter 5 the aim was to present knowledge in practice as it was described in the interviews. In this chapter these statements are analysed and contextualized with the aid of the theoretical framework as well as with the background material. The aim is to deepen understandings of the research questions, and to expand and develop the theoretical framework with regard to the specific practice that is presented.

This chapter is divided into four sections with different foci and different theoretical levels or levels of abstraction. The first section deals with *Questions of knowledge and learning*. The second section, *Freedom and frames*, emerges from practical issues discussed in the interviews. The third section, *Aspects of expert orchestral playing*, is based on interviewees' statements about quality. In the fourth section, *Motivating forces*, issues that can be seen as more personal and emotional are addressed. The structure of the chapter moves from a relatively abstract level of knowledge, to tangible working issues, to more intangible musical issues, and to personal issues.

6.1 Questions of knowledge and learning

To understand what it means to be an orchestral musician, issues of knowledge and learning must be considered. All interviewees drew attention to the importance of contextual knowledge and of knowledge associated with the musician's individual musical expression. This section addresses different aspects of knowledge that the musician needs, how orchestral playing is learned within and outside educational institutions, and the tension between contextual knowledge and personal musical expression.

6.1.1 Johannessen's model of knowledge

In the interviews several issues emerged such as how to execute a task in an orchestra, and what was important to be able to execute a task. These illustrate the kinds of knowledge that are required to be able to play in an orchestra. Orchestral musicians' knowledge is shown in action, and a profession based on practical knowledge can be analysed with the help of Johannessen's (1999; 1999/2002) theories. In order to describe knowledge of performing music, Johannessen's (1999; 1999/2002) model dividing knowledge into propositional knowledge, skill, knowledge by familiarity and judgement can be used (see 3.1.5).

Examples of propositional knowledge (Johannessen, 1999) can include understanding a musical score or the ability to understand the conductor's conducting pattern. This is basic musical knowledge that must be obtained in order to be able to play in an orchestra. But this musical knowledge can also be developed further. As reported in the interviews, practices such as reading books related to performing music (see 5.4.3) also exemplify propositional knowledge. Propositional knowledge is not necessarily written knowledge, knowledge that can be verbalized, or knowledge that is primarily verbal. An example of knowledge that is not primarily verbal is conducting patterns, which can be written down, drawn, described, but also shown. It is as a practice, or as it is shown, that the conducting pattern makes sense. From a Wittgensteinian perspective, propositional knowledge can also be understood as knowledge used in a language game (Wittgenstein, 1953/2009, 1980/1984; 1969/1979; see 3.2.3). Propositional knowledge is not necessarily a priori knowledge. However, as an explanation of knowledge that is transferred, practiced and learnt differently than skill, judgement or knowledge by familiarity, the concept of propositional knowledge is useful. Propositional knowledge, as in the example of conducting patterns described above, must be interpreted and thus can be seen as skill and knowledge by familiarity when performing music.

Much of the knowledge required in the orchestra can be understood in terms of Johannessen's (1999) concept of skill. Skill as musical and technical knowledge is fundamental to musicians' education. But if orchestral musicians are thought of as craftsmen, or music performance as mainly techné (Aristotle, 1995b), something is lost since the focus is on practical implementation and results, and not on inner reflection upon the craft. The concept of skill cannot adequately describe the knowledge of performing music. The distinction between the concepts of praxis and poiesis (Aristotle, 1995b) can help illuminate the issue in which performing music is not only a goal but also a practice. It was stated in the interviews that the notion of skill in relation to orchestral playing, should concern not only musicians' individual practical skills but also the same skills as they are further developed in context (see 5.4). As an example, volume had to be considered in context. One of the interviewees stressed that the ability to play loudly with good tone quality was developed in the venue in which one plays (see 5.4.1). This was also highlighted when the interviewees considered the

differences between solo playing and orchestral playing (see 5.2.2). To be able to perform what is required in the context demands technical skill. Consequently, when describing musical skills there is a difference between what could be considered as skills and as contextual skills. There are skills that could be considered to be prerequisites to orchestral playing and there are skills that are important when playing in the orchestra. In the interviews this was described as soloistic skills that were required in order to be able to develop contextual skills. When speaking of a musician's skill, one refers not only to the individual's technical and musical ability but also to the context in which the skill is used. Skill is both a technical and musical issue as well as a contextual issue, and some of these contextual skills are specific to orchestral playing. Within orchestral playing, skills are developed in relation to the performance situation. Contextual skills can be seen as similar to knowledge by familiarity and judgement (Johannessen, 1999).

Knowledge by familiarity (Johannessen, 1999) is the ability to assess the particular and its possible connections to the current situation or context; it is developed through experience. It is not the same as contextual skills, which can be understood as musical and technical skills that are developed in the context. The interviewees asserted the importance of obtaining knowledge through experience, both as a student and as a professional musician (see 5.1.3). Knowledge by familiarity is dependent on the amount of experience obtained. Consequently, the emphasis on experience in the interviews showed an awareness of how the construction of knowledge occurs (see 5.1.3). When the musician has extensive experience it is possible to transfer knowledge more easily to new situations. Knowledge by familiarity is therefore a kind of contextual knowledge that one must obtain to be able to meet the demands of a professional musician.

Judgement (Johannessen, 1999/2002) is the ability to apply knowledge and is dependent on experience and the ability to discriminate between different options. Hager and Johnson's (2009) emphasis on the ability to make context-sensitive judgements when learning to play in an orchestra can be related to Johannessen's view. To choose between different options judgement must be used; and within orchestral playing it is dependent on knowledge by familiarity, skill and propositional knowledge. Judgement is essential to the ability to use these other aspects of knowledge in the orchestral context. The interviews showed that propositional knowledge and skill were consciously developed outside of the orchestra, for example, by reading treatises on instrumentation, or practising to maintain a high technical level (see 5.1.1; 5.4.5). Knowledge by familiarity, judgement, and contextual skills were developed within the orchestra, for example, through learning by listening and by getting experience (see 5.1.3; 5.4.5). However, all of these different aspects have to interact when performing.

6.1.2 Impact from the senses, reflection and action

In all interviews the theme of listening emerged: as a basis for performing music with other musicians and in relation to action (see 5.4.3; 5.4.4). They described how musicians must react appropriately to what is happening in the surrounding orchestra. This connection between listening and action can be perceived through the process of reflection. For Locke (1690/1992) reflection is the inner activity of the soul but based on sensations from the senses. Reflection is described as an activity and as a source for ideas and emotions. Locke's description of reflection can easily be adapted to music-making as an activity and to sensations from the senses. Fjelkestam (2009b) argues that in order to address problems, they must be made visible in the process of reflection. In musical practice reflection is linked to the auditory perception of oneself and of the context and through this, when something has been made visible or, in this case, audible, the process of reflection as an act can be understood. For example, if how playing music in the context is experienced it is also possible to change the way of playing. This can be seen as a rationale for rehearsing music. In one of the interviews it was emphasized that it is important to know exactly whom and what to listen to in the specific situation (see 5.4.3) especially when addressing issues like knowledge about specific repertoire or seating (see 5.2.1). Knight (2006) describes different listening lines in an orchestra. For a professional musician, listening is a chosen, conscious act and reflection and action are based on the listening choices made.

Quick and appropriate reactions are described in the interviews as vital to an experienced musician (see 5.4.4); this ability relates to the concept of intuition (Larsson, 1912). Intuition as explained by H. Larsson (1912) is an enhanced ability to combine and to understand. To be able to use this ability the situation has to be regarded as a whole, an ability which develops through extensive experience. As experience accumulates and, thus, the quantity of examples for reference increases, the number of possible combinations and options for solutions also increases. Problem-solving is not done step by step but through discrimination of different elements simultaneously in the situation. The statement in one of the interviews that too much reflection and imagination could hinder the musician's performance instead of being an aid highlights the difference between problem-solving in a intuitive way and problem-solving through analysis (see 5.4.4).

Since quick reaction time is essential, judgement has to be applied as quickly as possible. This can be seen as an intuitive solution which is dependent on experience; the experienced musician does not need to consciously reflect but can solve problems immediately. Dreyfus and Dreyfus (1988) claim that a consciously analytical approach to solving problems is not needed at a higher level but is substituted by an intuitive solution. There may be a connection between the concepts of reflection and intuition, however. Reflection deals with processing a problem and intuition with solving a problem. Schön (1983/1991) and Janik (1996) describe reflection and action as intertwined in practical knowledge which implies problem-solving and problem-

processing at the same time. Aristotle's (1995b) deliberative phantasia, H. Larsson's (1912) intuition, and Landquist's (1906) henid, all describe the possibility of making decisions or performing actions without conscious reasoning towards the decision or action. In music performance a decision does not usually emerge from linguistically expressed problem-solving but is based on what H. Larsson (1912) calls an enhanced ability to understand and combine. The ability to use experience may be an enhanced ability to distinguish between different possible solutions in a situation. This might be the core of decision-making for a professional orchestral player. Conscious reflection is only applied when something does not work, or when it can be improved.

Knight (2006) observes the importance of sight lines in orchestral playing. These sight lines have different functions than listening lines and give different kinds of information. For example, it is important for all players to see the conductor, but it is also important to see certain musicians such as section leaders who can physically show musical interpretation through breathing or movements. Communication between musicians with movements was highlighted in one of the interviews (see 5.2.3). Thus physical embodied knowledge can be shown. There is also a difference between knowledge about orchestral playing and embodied orchestral playing. This was noted in one of the interviews, that it is possible to hear whether the part has been played with an orchestra or if the part has been played with a recording (see 5.1.3).

6.1.3 Developing knowledge

The interviewees consistently conveyed that orchestral playing was not only learned within or during formal education, but also that learning continued as professionals (see 5.1.3; 5.4.5). Musicians learn continuously throughout their careers (Smilde, 2009a; Smilde, 2009b; Hager & Johnsson, 2009). This suggests that institutional education of musicians is only one part of learning the profession of an orchestral musician and that the orchestral education within formal education may not be sufficient. Even if orchestral playing is learnt within education it is very difficult to draw a line where education or learning begins or ends.

All of the musicians interviewed described how knowledge and musical interests not directly associated with performing played a part in their musical knowledge (see 5.1.1; 5.4.3). For example, they had read books on orchestration as demonstrated by the exclamation, 'in the Rimsky Korsakov book it is about one page and a half, in Guiraud it's 8 lines!' and knew how these books on orchestration affected other composers (see 5.1.1). Another example is the understanding of how ballets were compiled due to the influence of ballerinas in the 19th century and how it still affects ballet practice, gleaned from reading autobiographies (see 5.4.3). All interviewees showed interest in music that was not related to their orchestral positions (see 5.2.2). These interests and knowledge can be compared with Ericsson, Krampe and Tesch-Römer's (1993) finding that high-level musicians spent more time with music-related activities than those of a lower level.

Dreier's (2000) observation that it is not always possible to foresee what knowledge may be useful in the future also relates to these statements from the interviews. External contextual knowledge is often a necessary part of the knowledge of playing in the orchestra. Gaining music-related knowledge is an important part of these interviewees' professional practice and a way of developing knowledge within the profession. It can also be seen as a sign of a general interest in music, reflecting a more personal interest in music. This interest can be associated with the motivation to become a musician and the motivation to work as a professional musician (see 5.4.6).

For the musicians interviewed, working with other good musicians was considered both a joy of the profession and a means to further learning (see 5.3.2; 5.3.3; 5.4.5). Learning by listening was one of the means of improving orchestral skills as well as improving musical skills. However, in the interviews, ways of explicit knowledge sharing were also described (see 5.3.2). One was sharing practical solutions between colleagues, such as sharing parts or helping out in a tricky situation. Another kind of sharing was less direct, described in 5.3.2 as sharing knowledge through anecdotes. This kind of sharing might be seen as a balancing act between gossip, entertainment and information. However, musical knowledge is mediated through stories and anecdotes. Janik (1996) and Johannessen (1999) describe how tacit knowledge is communicated through words even if these words are not exact descriptions. This kind of sharing can be understood as communicating knowledge in a way that is common among musicians. The anecdotes often draw attention to tricky situations in the orchestra that have to be addressed. The anecdotes can be transferred analogically to other similar situations (Johannessen, 1999/2002; Janik, 1996). Cottrell (2004) also points out how humour and anecdotes can be used to release tension and to confront hierarchies. They also enhance group identity and Cottrell argues that this is important in professional musical life.

Different audition practices were described in the interviews, noting that a soloist's knowledge is fundamentally different from contextual orchestral knowledge (see 5.1.3; 5.2.2). Learning orchestral playing as a professional musician can be difficult since the audition process often assesses contextual knowledge of orchestral playing. Gaining a position without the required contextual knowledge may be difficult. To gain a position as an orchestral musician the technical and musical knowledge of a soloist is evaluated in the audition (Bullen, 1995/2009). The contextual knowledge of orchestral playing is also often assessed. As Allmendinger, Hackman and Lehman (1996) claim, most musicians gain their positions early in their career. It is thus important to gain the required knowledge early in one's career.

Gaining a position in an orchestra can be seen as a *rite de passage* to the profession (Kvale & Nielsen, 2000). But learning the profession does not end after gaining the position – professional knowledge is continuously developed and learnt in detail. This detailed contextual learning is described as the core of experience in the interviews. The biographies in Smilde (2009a) do, however, reveal that learning might be dependent on which position the musician holds in the orchestra. This is also highlighted in one

of the interviews in which some musicians are described as becoming 'factory workers' i.e., losing their interest in developing as musicians (see 5.3.3).

Since the orchestral context is similar for the student and the professional, experiences gained as a professional strongly influence teaching. As an example, one of the interviewees taught her students how to write cadenzas since in her career she had had to do it herself several times (see 5.3.2). This relates to Janik (1996) who claims that an expert often has an educational role, and an interest in development. For example, one of the interviewees, in her role of educator and head of department at the academy, methodically brings her experiences into her teaching and into the organization of the students' education (see 5.1.3).

The professional knowledge developed within the orchestra by these professional musicians mainly concerned the issues described below in section 6.3: tone, tuning and ensemble playing. These issues relate to experience gained when playing in the orchestra. This professional knowledge can partly be described as accumulated contextual knowledge, for example, knowing how to tune in a specific piece of music. It can also be understood as reflective knowledge developed thorough continuous evaluation of the orchestral context. It was important to the musicians interviewed to maintain a high technical and musical standard after gaining their positions and to reach yet higher levels. In sections 6.2 to 6.4 more detailed descriptions concerning issues of knowledge from the interviews are presented.

6.1.4 The orchestra as a learning environment

The ability to play a part by oneself is not enough for a student since playing it with an orchestra is different, an issue that is emphasized in one of the interviews (see 5.1.3). In the same interview, it was noted that it is possible to assess this knowledge when listening to a musician playing an orchestral part. In a practical profession there is a difference between knowing about something and knowing how to perform something in the right context. As described in this interview, a student gains different kinds of knowledge about repertoire by listening than by playing.

This importance of learning in the right context, and the consequent difficulty for harpists in obtaining the knowledge required, was emphasized in all interviews (see 5.1.3). The interviewees' experiences of their own education, their ideas about how students could obtain contextual knowledge, as well as their own experiences as orchestral players were fundamental to their descriptions of how to learn orchestral playing. Learning in the orchestral context is similar to Lave and Wenger's concept of learning in a community of practice (Kvale & Nielsen, 2000) but with the difference that the concept of legitimate peripheral learning (Lave, 2000) cannot be applied since the student is not schooled into the community of practice but participates directly (Heiling, 2000). The contextual situation is usually the same for a student as for a professional musician, as evidenced by the practice of sharing material with students –

orchestral parts and knowledge – which was described in the interviews (see 5.1.3). For example, the same orchestral part could be shared with a colleague, given to a student in an educational situation, or kept for use by the musician herself or himself (see 5.3.2). There were not any differences in the score used or the situation in which it was going to be played regarding some aspects of orchestral playing. Johannessen (1999) and Hager and Johnsson (2009) also emphasize the importance of learning in the proper context.

One of the interviewees noted that playing with an amateur or school orchestra is often more difficult than playing with a professional orchestra (see 5.1.3). Since the musicians in a non-professional orchestra do not have the contextual skills, listening skills and technical skills of the musicians in a professional orchestra the result is less predictable and therefore it is more difficult to play with a non-professional orchestra. Heiling (2000) observes that different levels of knowledge and different levels of ambition affect an amateur orchestra and the individuals who participate. In this interview it was observed that a non-professional orchestra would usually rehearse more, since more rehearsals are needed, and therefore the student would get experience of playing the same pieces, parts, and passages several times which was considered to be vital for learning (see 5.1.3). In rehearsal, thanks to several repetitions, the learner would be able to apprehend the context. The experience of playing with non-professional musicians could address several issues: to get more experience, to practice contextual skills since rehearsals are more extensive, and to work in a difficult environment. In a non-professional orchestra the individual cannot trust the other musicians in the same way as in a professional orchestra, thus confidence and trust in the musician's own skills can be developed. Confidence in one's own playing was considered essential for a professional musician (see 5.4.5).

The experiences from amateur orchestras that Frimodt-Møller (2010) refers to in his thesis are relevant in this light. His experience, in which a percussion player makes a mistake and causes chaos, or the situation in which the whole brass section picks a different tempo and the rest of the orchestra follows, undergirds his idea that loud instruments influence the orchestra more. However, as suggested in the present study, trusting oneself as a musician is important and chaos in a professional orchestra would normally not occur due to a mistake as it would in an amateur orchestra. This study also suggests that there is a complex pattern of governing or affecting each other in a professional orchestra (see 5.2.3; 5.4.3). Consequently, an amateur orchestra can offer a learning environment that is very different from a professional orchestra. This applies even though some aspects of orchestral playing are the same or similar, as stated previously. It is possible that some aspects of learning can be enhanced by participating in an amateur orchestra due to difficulties not encountered when participating in a professional orchestra. It is also possible that learning from playing with an amateur orchestra will be different for a student who is developing his or her contextual knowledge than it is for the amateurs who usually play with the orchestra.

Even though the orchestral context is the most important environment for learning, as teachers, the interviewees were aware of their role in mediating knowledge (see 5.1.3). As reported in Lonnert (2011) harp teachers methodically prepared their students in advance for possible learning in the orchestral context. One of the difficulties was that learning in the orchestral context could normally not be done step by step but usually occurred directly in a complex situation even if there were ways of bridging this gap. Orchestral playing involves many layers of information, coding and knowledge, which make it complex. As in the example of Madame Dulova's role at the Bolshoi, the teacher is an important source of information and transmitter of experience and knowledge (see 5.1.3). Also vital for the development of knowledge were positive emotional experiences of orchestral playing. Lucas and Barber (2006) also stress the importance of positive emotional experiences for a student.

6.1.5 The importance of experience

Experience was regarded as essential to learning orchestral playing by the interviewees who recalled different approaches to obtaining this experience, which could be due to educational factors and different orchestral practices. As professionals, they were all aware of the importance of getting enough experience during formal education if possible (see 5.1.3). Experience might be directly dependent on the amount of time spent playing in orchestras, in line with Ericsson, Krampe and Tesch-Römer's (1993) observations about the amount of time spent on learning to be able to reach a high level. The interviewees reported encouraging their students to gain experience outside of their formal education due to the fact that education did not offer enough opportunities for the students to gain experience of orchestral playing (see 5.1.3). Getting experience outside formal education would mean getting more knowledge about repertoire, and getting more experiences of rehearsing.

However, getting experience is not the same as reaching eminence. While experience can be seen as a prerequisite for learning orchestral playing, it does not automatically create knowledge of orchestral playing. The interviewees considered experience essential to learning how to play in an orchestra; they also noted that useful experience was associated with repeating the same pieces in different contexts and on several occasions (see 5.1.3). To be able to play different interpretations of a piece or to play the same piece with different conductors or different orchestras could enhance the kind of learning involving the transferability of the knowledge to new situations. Rehearsing the same piece could also encourage the acquisition of detailed knowledge of the interpretation and the piece.

Experience as a prerequisite to learning can be viewed from different angles. When the individual has experience of many similar situations it is possible to transfer knowledge analogically (Johannessen, 1999). It is also possible to see a musical piece in terms of Wittgenstein's (1953/2009) concept of family resemblance in which there are no

systems of similarities. Acquisition of experience can be seen in the light of Dreyfus and Dreyfus' (1988) model in which students can solve more problems through reflection when they have more of their own examples and references. Experience also contributes to reducing the time needed to react and act as described in the section above (see 6.1.2).

It is noted in the background chapter that obtaining experience can be difficult for harpists (Wooster, 2006; Lucas & Barber, 2006; Rollo & Bowles, 2006; see 2.3.4). A problem for an inexperienced orchestral player is that if it did not go well the first time, he or she might not be asked to play with the orchestra again since the priority might be on the overall orchestral product rather than the development of the individual's orchestral skills. As a consequence, inexperience creates inexperience. In one of the interviews it was argued that while getting the opportunity to play with an orchestra once is not a problem, being asked a second time is the challenge (see 5.1.3). As noted in the same interview the reason for the call might be because a musician became ill. This might have the consequence that an inexperienced player has a more difficult task than an experienced player since the time to prepare is very short. An experienced player might also have more knowledge than an inexperienced player about how to compensate when the situation is not optimal. This illustrates Aristotle's idea of how problems caused by external circumstances can sometimes be solved through knowledge and experience (Nussbaum, 1993).

6.1.6 The orchestral context and the individual musician

The interviewees described how orchestral auditions often focused on soloist's qualities before assessing contextual knowledge, if contextual knowledge was assessed at all (see 5.1.3). This means that musicians are judged for exceptional soloist qualities and compared to others' at the initial audition. The second part of the audition is usually the evaluation of contextual knowledge. A musician should have a musical personality that distinguishes him or her from other musicians, but at the same time be able to fit into the orchestral context (Cahn, 1992; Davis, 2004). Hager and Johnsson (2009) stress the importance of contextual knowledge and claim that music education and orchestral auditions focus on the individual knowledge rather than the contextual knowledge that is required in the orchestra. They also claim that fitting into the group's style is more important than having a personal style. Parasuraman and Purohit (2000) also note that musicians are often trained as soloists, which is different in many ways from playing in an orchestra.

The musicians interviewed considered tone quality to be an indicator of an excellent musician and ensemble playing to be an indicator of an excellent orchestral musician (see 5.4). Consequently, both the individual musician's expression and her or his contextual knowledge were seen as important. Therefore knowledge associated with being a soloist was not regarded as opposing contextual orchestral knowledge. Soloists'

knowledge provides a foundation for gaining contextual knowledge and is also important within the orchestral context. Contextual knowledge could also be gained after obtaining the position. A fundamental prerequisite for gaining contextual knowledge was the musician's interest in orchestral playing (see 5.2.2).

The interviewees clearly expressed that it was important to them as musicians to work as an ensemble, as an orchestra, and that discriminations and choices were often made with the totality of the outcome in mind (see 5.4.3). The orchestra's general standard of performance depends on the standard of performance of the individual musicians and how they cooperate. If, as related in one of the interviews, the first harpist has to change the interpretation due to the second harpist's inability to follow the interpretation, the musical standard might suffer (see 5.2.3).

The organisation of the orchestra and its standards can be considered in the light of Erden, von Krogh and Nonaka's (2008; see 3.3) model of group tacit knowledge. In the second level, collective action, the group can act together but is not prepared for unexpected situations. In the third level, phronesis, the group can act together as a group in particular situations. In the fourth level, collective improvisation, the group can act together in unexpected situations, and make appropriate decisions. There is also an innovative dimension to decision-making at this level. In order, to be able to work together as a group it is necessary to share common values, norms and practices.

Frimodt-Møller (2010) deepens the notion of common norms in a group such as an orchestra. He claims that coordination in an orchestra is dependent on how the individuals treat norms and which hierarchy of decisions the individual chooses to follow. Combining Frimodt-Møller's (2010) ideas with the model of Erden, von Krogh and Nonaka (2008) contributes to an understanding of these different levels. The more a group, in this case an orchestra, shares rules that are considered common knowledge, knowledge about reactions of other musicians, and common strategies or goals, the better they can work together as a group. Knowing the importance of knowledge of how other individual musicians in the orchestra play was described in the interviews (see 5.2.3; 5.4.2; 5.4.3). For example, it might be important for the first harp to choose a second harp with whom he or she knows it is easy to work, musically and socially, to create the best result as a section.

Augustine's (n.d.) reflections on the concept of time offer another perspective on cooperation in the orchestra and on how to play music. Memory, observation and expectation, the past, the present and the future, have a complex relationship when playing music. For example, the individual musician is affected by the temporal relationships between rehearsals and concerts or by knowledge and expectations of how other musicians play combined with observation of the present. The following example develops this notion: A musical phrase played by two musicians in unison is rehearsed a couple of times. When playing this phrase anew they must attend to different aspects of time. Both individual musicians must remember how it was played last time and evaluate the performance. The individual musician has to predict how he or she expects

the colleague to play it. These expectations are likely to change during the playing of the phrase according to how it is played in the present. There are, of course, other aspects to this but it begins to illustrate the complicated relationships regarding the concept of time when playing music.

Wittgenstein's (1953/2009, 1980/1984; 1969/1979) concept of language game offers another way to describe contextual agreements in a group such as an orchestra. To participate effectively in an orchestral context the musical actions performed and the knowledge possessed and expressed must suit the context. Playing with baroque technique in a piece by Bartók does not make sense, unless it is a part of an agreement. The individual musician must adapt to the language game required regarding, for example, musical style or required volume, as was described in the interviews regarding learning to play with a specific orchestra, or the specific kind of orchestra. For example, a large orchestra requires more volume than a small orchestra, an issue highlighted in one of the interviews (see 5.4.1). Likewise, one's notion of tone is based on one's education or may be specific to an orchestra (see 5.4.1; 6.3.1). The language game of the orchestra must be contextually negotiated.

However, it is not so simple as to say that solo playing does not require ensemble skills. Of course, all music making with other musicians requires ensemble skills, not only in orchestral playing but also when being accompanied or playing chamber music. But the orchestral context is a situation in which there are hierarchies and in which cooperation with a large number of other musicians is required. As described in 6.1.2, the work of musicians is based on reflection and reaction to what they hear – continual evaluation. Not only must orchestral musicians listen to themselves they must also listen to the orchestral context as well as to themselves in the orchestral context. The choices made by the musicians are clearly dependent on the musicians' listening capacities. Evaluation is an on-going process executed by musicians. Considering Kvale and K. Nielsen's (2000) description of evaluation through practice, evaluation based on listening is the predominant tactic when improving the practice. But to improve the orchestra's practice, evaluation has to be carried out by all individual musicians in the orchestral collective.

One may consider extending Austin's (1979) concept of speech acts to a musical context in the sense that a musical statement has to have a purpose and a justification to make sense. As well as implying that the right note should be played by the right musician in the right time (see 5.4.1; 5.4.3) it could be extended to a deeper musical contextual notion. Osa (2007) stresses that the purpose of musical knowledge is to communicate meaning, which implies that the listener's role is as important as the performer's role.

The orchestral structure is determined by, for example, the size of the orchestra and the score that is played (Knight, 2006). Any musician should be interchangeable with another musician playing the same instrument (Cottrell, 2004). Different knowledge is required for different positions. A tutti violinist works in a different structural

position than a first oboe, and the contextual requirements are different. Further, the first and second oboe have different contextual requirements. The interviewees described the differences between the roles of first and second harp (see 5.2.3; 6.2.3). The notion of an individual in an orchestra can be further problematized. As Hager and Johnsson (2009) claim, there are different layers in an orchestra. A section, or a part of a section, in an orchestra is also an individual unit of the orchestra, not only the individual musicians. What an individual is also depends on, for example, the size of the orchestra and the repertoire played. However, even if the positions are fixed the musicians also have differing musical roles within their positions (see 5.2.3).

6.2 Freedom and frames

There are multiple layers of frames (see 1.3.2) or constraints for an orchestral musician. Within these frames the possibilities for expressing musical freedom are found. In this section these issues are divided into working conditions, the score, the position in the orchestra, exposure of the individual musician in the orchestra, the conductor and technical skills. Finally the notion of interspace, the interpretive space, is addressed in this section.

6.2.1 Working conditions

Problems in the working environment and problems related to orchestral musicians' working conditions have been examined by Brodsky (2006), Liljeholm Johansson (2010), O'Brien, Wilson and Bradley (2008), and Parasuraman and Purohit (2000) as well as other studies referred to in these articles and in Brodsky (2011). In this section the focus is on problems related to working conditions described in the interviews.

The interviewees conveyed that there were differences in repertoire and workload since they worked in different kinds of orchestras (see 4.2). Different orchestras have different workloads depending on the kind of orchestra. For example an opera orchestra usually plays fewer productions than a symphony orchestra; on the other hand they usually work more evenings and play the same production several times. The workload also differs between instruments played. For a harpist there is usually more work with an orchestra that mostly plays mostly French repertoire than with an orchestra that plays German repertoire, as was described in one of the interviews (see 5.1.2). On the other hand, French repertoire is usually more idiomatic than German, as evident when one compares the harp parts of Debussy and Ravel with the parts of Wagner and Strauss. Thus the parts in German repertoire may be more demanding. Due to workload differences depending on instrument and repertoire it is not easy to define the workload in general for a whole orchestra.

Musicians are requested to do much of their work outside the set working hours in the orchestra. This means that the musician himself or herself is responsible for practising on his or her instrument as well as learning parts (Liljeholm Johansson, 2010). This does not mean that he or she can always control how to use his or her working time. For example, if parts are distributed late, musicians can be forced to practice the night before a recording in order to be able to do a good job. One of the interviewees indicated her preference for getting the part in the morning it was going to be played rather than late in the evening before (see 5.1.1). Orchestral management can exploit musicians' sense of responsibility for the performance standard since unregulated working hours are not usually noticed. Nowadays, it is possible to distribute parts by fax or by email, which makes it easier both for the orchestral management to send parts and for the musicians to obtain parts. But it is still the musicians' responsibility to prepare the part in time. The practice of late parts distribution can be compared to the practice, now described as abandoned, with unneeded musicians waiting at rehearsals if the conductor decided to change the program (Pike, 2003).

Harpists need to mark and practise their parts before the first rehearsal, which is very time-consuming (Rosen, 1993). The interviewees described a practice of photocopying and saving parts to reduce the work (see 5.1.1). Rose (2007) describes a practice of contacting colleagues to obtain information and thus reduce the workload. This kind of collegial contact was also described in the interviews, as was sharing parts with students (see 5.3.2). There are legal considerations in regard to this practice but it is widely spread due to the working conditions. This confirms the existence of knowledge particular to this practice since experience of the specific piece and situation is saved in writing. Notations in parts do not need to be remembered in full but can be extracted from personal notations made earlier (see 5.1.1). The practice of sending PDF files to the musicians also has legal implications. The orchestral part is then printed out by the musician, and sometimes the original part is never obtained. Sometimes an original printed part does not even exist.

All harpists interviewed in the study worked in large orchestras. The ability to play loudly for a long time is required in large orchestras and in large concert venues (see 5.4.1). In smaller orchestras more varied nuances can be used. Musicians in orchestras are responsible for their own working conditions and health (Liljeholm Johansson, 2010). The ability to play loudly enough was considered by those interviewed to be a skill that was developed in the orchestral context (see 5.4.1). Playing loudly for a long time demands physical strength.

Working conditions may also include gender issues. Historically, being a woman in an orchestra has been seen as a problem (Phelps, 2010). One of the interviewees recalled that being a mother in her orchestra was seen as a problem and that motherhood still affects working conditions for musicians today even though there have been changes for the better (see 5.1.2). Having unregulated working hours, working evenings and weekends and extensive touring affects family life which still affects women more than

men. Childcare issues are also addressed by Phelps (2010) when noting working conditions for women in orchestras.

Working conditions can also be related to seating in the orchestra. Usually the harp is placed at the back (Knight, 2006), a practice that may be problematic since it is more difficult to see and to hear from that position (see 5.2.1). The practice in some orchestras in which the harps are placed more centrally makes ensemble playing easier. This practice is used at the Bolshoi, probably due to the harp's central role in classical ballets. Seating in the orchestra can thus be different if the instrument is considered to be important, with a consequence that it facilitates the musicians playing well. Problems with the three visual points – seeing the harp, the part and the conductor – may increase with peripheral placement. However, peripheral placement is chosen due to the fact that the harp might otherwise obscure other musicians' lines of sight (Rollo & Bowles, 2006). One of the interviewees claimed that there are practical issues that become more problematic with age (see 5.2.1). These problems are of course not only particular to the work of harpists. But a specific visual problem for harpists that might develop when getting older is the difficulty of seeing clearly at three different distances: the strings, the music stand and the conductor.

Physical strength and staying healthy are necessary to be able to work as a musician (see 5.1.2) A general problem for musicians might be loss of finger flexibility with age making it more difficult to maintain good technique. Additionally, as Liljeholm Johansson (2010) stresses, work related injuries are common among musicians and musicians usually work extensively even with injuries, which may make the injuries worse. Problems with hearing may develop due to loud volume in the orchestra (O'Brien, Wilson and Bradley, 2008). When getting older, contextual knowledge may be very deep but skills affected by physical issues as such as finger flexibility, are more difficult to keep up. Experienced musicians can probably use their contextual knowledge to substitute for reduced skills to some extent.

Working in a context in which top performance is always required relates to health issues and stress. A stress factor specific to orchestral musicians may be when limitations affect freedom in performance (Parasuraman & Purohit, 2000). The working environment may be very difficult in an orchestra as described by Liljeholm Johansson (2010). She also advocates that orchestral management should take responsibility for some of these problems since the problems are structural problems, not individual problems. Working conditions may also be instrument specific. For harpists these include the need to tune before the rehearsal or the concert, and during breaks (Bullen, 1995/2009; Del Mar, 1981; Yeung, 2006; see 5.4.2). This impacts the working situation due to the fact that harpists seldom get the breaks other musicians have. This is also highlighted in one of the interviews in which the harpist, due to changes in the number of breaks, was met with the comment that she then did not have to spend all her breaks tuning. Yet she still had to tune even though the breaks were fewer (see 5.4.2). Harpists often have to move their instruments themselves (Swanson, 1984), although this is not a usual practice when one has a steady job in an orchestra, as noted

in the interviews (see 5.1.2). Semmler (1998) claims that, while many work-related problems for harpists are related to playing the harp, others are related to transporting the harp. Transporting and moving harps can also be problems for orchestral players if they also work as soloists and chamber musicians. During their education they also have to move their instruments themselves. One of the interviewees stated that it is important that a harpist is physically strong, not just to be able to play but also to be able to move the instrument when needed (see 5.1.2; 5.4.1).

Workload, physical strength, and health affect the possibility of musicians performing at their best. Working conditions such as scheduled working hours, and requested unscheduled workload affects family life and the possibility of musicians performing at their best. The work environment and conditions can affect the musical performance as well as the possibility of development within the profession.

6.2.2 The score

The score and the parts are the main tools for performing a particular piece in an orchestra. Thus the harp part was a central focus when discussing orchestral issues in the interviews, and when discussing related issues such as instrumentation, composing, education, interpretation and performing. Preparing parts before a production was seen as necessary by all harpists interviewed as well as by the harpists referred to in the background chapter (see 2.2; 5.1.1). For a harpist, preparation means marking and studying the parts before the first rehearsal. Preparation can also include solving problems in parts.

In the interviews presented in Chapter 5 as well as in the books referred to in Chapter 2, harpists sometimes express a complicated relationship to harp parts (see 2.2; 5.1.1). Mostly this is due to composers' ignorance in a contemporary as well as in a historical perspective. It is important to point out that most of the time harpists play what is written, but the problems in parts are so common that they cannot be overlooked. The problems with unidiomatic parts do not seem to be solved over time but tend to both reproduce themselves and to appear again and again in new contexts. Attempts from harpists to educate composers can be seen in literature from Zabel in the 19th century to well into the 21th century (in the order they were published: Zabel, 1894/1980; Salzedo, 1918/1948; Salzedo & Lawrence, 1927/1929; Tournier, 1959; Graae, 1960; Lawrence, 1962; Chaloupka, 1979/2002; Inglefield & Neill, 1985; Rose, 2007). Problems with unidiomatic parts were also described in all interviews (see 5.1.1). The educational aspect of contact between musicians and composers was discussed in all interviews and the same issues were raised as those in the background chapters concerning the composers' knowledge (see 2.2; 5.1.1). Salzedo and Lawrence initiated a way of educating composers (1927/1929), suggesting that composers should study the harp to be able to write for it. This was reflected in one of the interviews by the reference to the composer Levitsky who not only studied the harp for two years at the

conservatory but also wrote an extensive chapter on the harp in his book on orchestration (see 5.1.1). Orchestration books advise composers to contact a harpist for information (Adler, 1982/2002; Graae, 1960; Tournier, 1959). It is also known that harpists directly influenced composers (Owens, 1993; Shameyeva, 1994; Slaughter, 1992; Widor, 1904/1946). Shameyeva (1994) emphasizes the importance of good musicians providing models for composers, as well as taking an interest in and performing contemporary music to keep composers interested in writing music for the harp. This highlights the relationship between musicians' education and composing.

Contact between composer and harpist is vital. Historically, some of the most effective and idiomatic harp parts have been written when the composer has consulted a harpist (Tournier, 1959); this is a practice that is recommended. Discussion between individuals is therefore seen as essential for composing idiomatic parts. This is related to Janik's (1996) idea that the learning of practical knowledge occurs between individuals. It is then the responsibility of musicians and composers to take interest in and to respect each other's work.

There are several reasons why problems in parts occur. One of the most common reasons described in literature as well as in the interviews (Rose, 2007; see 2.2.1; 5.1.1) is similarities between notation in piano and harp parts, which often leads composers to write pianistic parts for harp. Another is that mistakes sometimes travel from book to book on instrumentation probably due to respect for previous writers (see 2.2.2). Since composers study other composers' scores in which there are mistakes, mistakes are repeated, as noted in one of the interviews (see 5.1.1). Educational attempts by harpists for over a century seem to have had very little impact on composers. Zabel (1894/1980) pointed out in the late 19th century that harpists who made changes in parts perpetuated the practice of unidiomatic parts since the score was not changed. This issue also came up regarding contemporary music in one of the interviews in this 21st-century study (see 5.1.1). The interviewees suggested a practice of harpists consulting with the composer or arranger, and that the harpists could rewrite parts with the composer's consent. The parts could then be changed for future performance and study rather than only a personally changed part that belonged to the harpist.

Since difficulties do occur in harp parts, harpists need to know how to obtain information about how to solve problems and how to edit parts. Contact between composer and harpist, as described above, is not possible in most cases. For example, it is important for a harpist to know which parts are traditionally changed. The most well known example of a harp part that is changed, even if there are several different editions of these changes, is *The Nutcracker* cadenza (Adler, 1982/2002; Bullen, 1995/2009; Dulova, 2004; Konhäuser & Storck, 1994; Renié, 1946/1966; Zingel, 1977; see 2.2.3; 5.1.1). Performance traditions of parts are contextually influenced regarding, for example, the style of the orchestra or style of the music. Thus, it is important to know the context in which the part will be played or the wrong edition may be chosen as was described by one of the interviewees (see 5.1.1). The musician must know in what style or tradition to perform, or what edition of a part to use, taking the context into

consideration. Another way to obtain information may be to consult literature written by colleagues such as published books with parts (Bullen, 1995/2009; Bullen, 2008; Dulova, 2004; Konhäuser & Storck, 1984; Renié, 1946/1966; Rose, 2007; Zingel, 1977). However, even these solutions are not always transferrable to the required context, since they are written from a particular context and dependent on the preferences of the harpist, the style required, the time it was written and a specific orchestra (see 5.1.1). These solutions may vary and must be assessed in terms of the context in which the part is going to be played (see 2.2.3). Another way to obtain information is to consult previously used parts with markings (see 5.1.1; 5.3.2). Keeping photocopies of played parts saves preparation time since markings do not have to be made on an unused part and good solutions marked in the parts can be saved for future use. It is also possible to contact colleagues for information about specific parts (see 5.3.2). Sharing photocopied parts with students is also common among teachers. The practice of sharing parts is vital to education and to orchestral practice.

Musicians have to make choices about how to interpret the score since the score does not give all the information. For example, in order to interpret notated harmonics it is necessary to know in what tradition the composer wrote or where the part was edited; otherwise the harmonic may sound in the wrong octave (Chaloupka, 1979/2002; Love, 2013). Another necessary skill is the ability to change an unplayable part to a playable part in a way in which the change is not noticeable. The overall musical result may be more important than the details (Bullen, 2008). Preferred solutions keep as much as possible of the original part. This often means dividing the part between first and second harp (Rose, 2007; see 5.1.1). However, this practice requires that a second harpist is available. Solving a problem by dividing a part is not considered a major change since nothing is removed from the part; it is only rearranged.

While a score, being written down, can be viewed as propositional knowledge, judgement and knowledge by familiarity are also used in its interpretation (Johannessen, 1999; 1999/2002). For an experienced musician there is more to learning a part than technical mastery of difficult passages. Interviewees described using previous contextual knowledge and interpretation in their process of preparing parts (see 5.1.1; 5.4). Applying previous experience to the process of learning and interpreting the part meant that a future musical context was in mind. Working on technique was also working on artistic expression (Hooshidar, 2009).

When the interviewees referred to harp parts, problems with parts were often emphasized (see 5.1.1). However, well-written parts were of equal importance. Judgement of a well-written part was made with reference to the instrumentation of the whole piece. The function of the part in the orchestral context was considered to be more important than whether the part itself was idiomatic. This is exemplified by the reference to Shostakovich who could write a well-orchestrated part even if the part was not always idiomatic to the harp (see 5.1.1). A difficult or awkward part that can be heard and has musical relevance in the orchestral context is thus judged differently from a difficult part that cannot be heard. Rose (2007) also underlines the importance

of writing idiomatically for the instrument and of knowing how to score for the orchestra.

It must be stressed that the informants considered it important to play the parts, or to try to play the parts as they are written, even if they are difficult and unidiomatic (see 5.1.1). This was a component of professional pride and of respect for the composer, which was clearly stated in all interviews. There seem to be two main issues related to unidiomatic parts. One is the education of composers and the other is solving problems in parts to make them playable. Since these problematic issues regarding harp parts described above are so widespread they cannot be regarded only as problems for individual harpists. They pose a structural problem for harp education and for the education of composers and conductors.

6.2.3 The position

A theme which emerged in the interviews was the difference between playing first and second harp (see 5.2.3). Each position in the orchestra provides different kinds of frames for musicians' performance. The first harp is responsible for decision-making, even though it could be limited by the second player's knowledge. However, in practice the second player is also responsible for his or her choices and actions as was exemplified in the anecdote recalled by Phia Berghout (den Hertog, 2008). The second player's role is mainly to support and follow the first player (see 5.2.3). Coordination (Frimodt-Møller, 2010) for the second player then has a different focus than for the first player. Contextual decisions have to be prioritised differently. Occasionally the second part is independent from the first part and a change of role occurs. Bullen (2008) claims that playing second harp is often more difficult, an observation also made in one of the interviews (see 5.2.3). Coordination within the section is important in orchestral playing as is noted by Hager and Johnsson (2009) who describe different layers of 'individuals' in an orchestra including the individual musician and the individual section.

To be a good second player demands certain skills. In addition to the fact that they should be good musicians they also, as one interviewee says: 'must *want* to play with you' (see 5.2.3). The second player should not try to prove himself or herself as a soloist, or that he or she is better than the first player but should make the overall orchestral result the priority. Personality can be a factor. Some musicians find it easy to work together since they feel the music the same way. As one of the interviewees says, it is not only about musical support, but also about personal support in a mentally demanding situation such as playing in an orchestra. The experience of working together for a long time, and through that process learning to play together, should also be considered. Developing trust in each other is vital.

Different positions in the orchestra provide different frames and different notions of freedom to different musicians. However as shown here, this freedom is constrained by

other musicians. The second player has to follow the decisions of the first player. But, as observed in one of the interviews (see 5.2.3), a second player who does not follow the first player limits the first player's freedom. The hierarchical structure makes it difficult to have peer-to-peer equality in a section in which the musicians have individual parts and different positions. The quality of ensemble playing is dependent on how the musicians handle their positions in the orchestra. The multiple musical layers in the orchestra, however, make this issue complex. It is not as simple as saying that the second or third player in a section always has to follow the first player because their part might have a different function. A part may also serve multiple functions at the same time.

6.2.4 To be exposed

It became evident in the interviews that exposure in the orchestra has positive and negative connotations (see 5.3.1; 5.3.3; 5.4.6). Being heard was important to musicians to make musical expression possible, but it also makes it possible to hear mistakes. Exposure was associated with responsibility. Feeling exposed in the orchestra is not unique to harpists. But several issues exacerbate the exposure of harpists. Usually there are only one or two harps that form the harp section. A string section or a woodwind section is larger, and the individual musicians may not be as exposed. If there are two harpists they usually play different parts in the orchestra and seldom double parts.

As with several other instruments in the orchestra such as percussion, piano and tuba, works do not always include harp. Instruments that do not always occur in the orchestra may be especially exposed when they participate. Exposure can be related to practical issues such as rehearsal schedules and seating on stage. Usually the harp is placed on the edge of the orchestra (Knight, 2006). This location might be a problem since it can be difficult to see the conductor from this angle (see 5.2.1). It can be difficult to hear other instruments when placed at the back of the orchestra (see 5.2.1). Being heard can also be a problem due to the sound radiation (Waltham, 2010). These practical problems may affect the performance, since it might be difficult to see, to hear and to be heard from this position. The experience of feeling exposed can also be dependent on the parts. Some parts are very difficult or unplayable (see 2.2.3; 5.1.1; 6.2.2), and this may be a reason to feel exposed as well as, for example, playing a part that is noticed because it is changed. The inability to sight read a part due to technical problems might also be a reason for a negative experience of exposure.

Exposure may be a result of the fact that the harp works fundamentally differently from all other instruments in the orchestra. The pedal system requires a notation system with which the harpist easily can set the pedals correctly at a specific bar in the score when requested, using, for example, a pedal graph or pictogram (Marson, 2005). If the notation is not written at the bar requested, it usually takes a bit of time before the pedal setting is done. This may cause the harpist to be late with entrances when other

musicians can start directly at the right spot as was noted in one of the interviews (see 5.3.1). In contrast with most other instruments, a pedal mistake may be difficult to correct when playing. One wrong note played by a bassoon is easily corrected but one pedal mistake by a harpist may affect a whole passage (see 5.1.2). Marson (2005) counted 2187 different settings of pedals which highlights the inherent difficulty with pedals. Another problem specific to the harp is the inability to adjust tuning when playing. Tuning was described in the interviews as a major issue in orchestral playing (see 5.4.2). Other musicians who cannot tune when playing, such as pianists and tuned percussion players, are not individually responsible for their tuning nor is the tuning of their instruments as easily affected by environmental factors.

A harpist's feeling of exposure can also be associated with lack of experience (see 5.1.3; 6.1.5). A musician who does not have the required competence will be exposed in an orchestra. Orchestral playing is built on so many layers of information and coding systems that an inexperienced player tends to either lack knowledge, or to be unable to assess the situation.

Exposure might also be seen as a gender issue. Historically, women were not often hired in orchestras and harpists were among the first female musicians to gain entrance to orchestras (Phelps, 2010). In this position they were not considered 'proper' musicians, since they were not part of the core of the orchestra. The gender issue might be implicated in the actions described by of two of the musicians in the study, one of the interviewed and one from the background material, both of whom described a practice of smiling at the conductor to avoid exposure when being criticized (see 2.3.2; 5.3.1).

Musicians may experience nervousness as a problem related to being a musician, as noted by harpist Osian Ellis (Smyth, 1970). Semmler (1998) refers to a study in which harpists reported the highest on-the-job stress of musicians in symphony orchestras. An issue particular to playing the harp is that sometimes a difficult passage occurs after a long period of not playing (Rose, 2007; Bullen, 1995/2009). This may cause physical problems, such as the hands getting cold. It may also be very stressful to wait for a long time without playing due to the need to control the tone. In one of the interviews, techniques for keeping the hands warm and for keeping the feeling of playing while waiting for an entrance were described. This was also shown to be part of the tradition and of orchestral practice (see 5.1.2). The difficulty of the task can also be considered a stress factor (Parasuraman & Purohit, 2000). Another part of the stress is the knowledge that the outcome of the concert and the performance of one's colleagues, the whole orchestra, is dependent on each musician's performance (see 5.1.2). But this stress factor could also be an incentive to play in an orchestra as claimed in one of the interviews (see 5.3.3; 5.4.6). An issue that emerged from the interviews is that while a musician should be confident when playing, it is as important that he or she appears to be confident (see 5.4.5), something that Bullen (1995/2009) considers to be an orchestral skill. Looking nervous may cause exposure, as shown in the anecdote about Phia Berghout (den Hertog, 2008). One of the interviewees observed that confidence in oneself is developed in the orchestra (see 5.4.5).

Exposure associated with parts may occur in relation to solo passages such as cadenzas in which the harp is alone (see 5.4.6). The exposure here gives the musician freedom to show his or her musicianship. Exposure as a musician therefore does not only have negative connotations but also offers musical possibilities. As the interviewees asserted, being heard is an important part of being an orchestral musician. This issue must be evaluated differently in relation to the different positions in an orchestra. Exposure might be related to mistakes made due to inexperience, difficulties in parts or work-related problems. There are accounts of harpists feeling harassed, especially by conductors (see 2.3.2; 5.3.1). However, exposure can also be a key to musical freedom (see 5.2.2; 5.4.6). Since a harpist often plays a part alone as a section leader or as a soloist it is possible to have musical freedom. It is also possible that the part will be heard in the exposed passages. Consequently there are two sides to being exposed in the orchestra.

6.2.5 The conductor

The conductor has the authority to give musical freedom to orchestral musicians (see 5.3.1). The interviewees suggest that this distribution of musical freedom is based on the conductor's experience; an experienced conductor is more likely to have the knowledge and interest to give musical freedom to musicians. It also has to do with the trust between conductor and musicians. The conductor's trust gives the musicians the freedom to perform, and the musician's trust gives the conductor the authority to lead. Trust is based on previous experiences and has to be earned. But as noted in one of the interviews, trust can be influenced by the conductor's previous experiences of a specific musician or by experiences of others in the position (see 5.3.1). A conductor thus chooses which musicians are given musical freedom.

A conductor who has experienced harpists that do not play to the standards he or she requires may be uninterested in exposing, or afraid to expose, the harp in the orchestra (see 5.3.1). It is suggested by the interviewees, even though the connection is not made directly in any of the interviews, that the overall experience of the conductor can be seen as similar to the experience of the musician (see 5.2.3; 5.3.1). Young conductors may be more interested in their own performance as young musicians sometimes are. They may lack a deep understanding of the music and the knowledge necessary to express and mediate their musical visions. Experienced conductors may be more interested in the overall musical effect and willing to give musical freedom to the musicians. Conductors are restricted by their own and the musicians' musical ability, knowledge and experience. A conductor may have the knowledge needed to enable musicians to perform at their best, make the instruments sound at their best or to choose tempi that make parts playable (Rose, 2007; see 5.1.2). Conductors who possess this knowledge were held in great esteem by the musicians interviewed. However, a musician must never be dependent on a conductor but must always trust himself or herself. All individual musicians always have responsibility for the overall result.

The conductor is responsible for the interpretation of the score. However, this does not mean the conductor has total authority since the conductor and the orchestra have a complicated system of interaction. The orchestra can be seen here in different layers: the whole orchestra as a unit, divided into sections, and as individual musicians (Hager & Johnsson, 2009). The conductor and the musicians are dependent on each other (Dobson & Gaunt, 2013) and Fisher and Jackson's (1997) suggestion that the myth of the omnipotent conductor should be replaced with a mutually responsive myth may be suitable. The conductor can also be seen as dependent on the same working conditions as the musicians, for example, the organisation, the size of the orchestra, and the standard of the orchestra.

The conductor is the key player in creating an outstanding musical experience. In the interviews as well as in the background chapter (Baum, 1962/1964; den Hertog, 2008; Smyth, 1970; see 2.3.2; 5.3.1) the conductor's role in creating the experience is described as vital. A specific joy can be built from memories of good performances and good conductors. This may affect the performance of something that does not measure up to the expectations. It is important to be faithful to the style required even when the interpretation does not appeal to the musician. The interviews revealed that usually there are only a few conductors that live up to the high standards of the musicians (see 5.3.1). The interviewees felt indifferent about most conductors. The conductors that were considered good usually had extensive experience, they had an interest in orchestral sound quality, they were charismatic, and could bring the orchestra to a high musical level. They should also have a direction and a vision where to take the orchestra. But they could, at the same time, give the musicians musical freedom by trusting and having respect for them.

The authority of the conductor must be given by the musicians. The musicians might choose to play with their colleagues and to follow their own musical ideas rather than to follow a conductor they do not respect (see 5.3.1). However, in some situations it might not be negotiable. Sidonie Goossens' experience of being asked to play a version of a part that did not fit in with the chosen orchestration may be considered an extreme case (Rosen, 1993). The choices must be made with the totality and the individual musician's role in mind. The interviewees related that, in a ballet performance, it is important that the conductor and the musicians follow the dancers (see 5.3.1). The musicians always have to evaluate the overall effect and their individual roles in order to be able to make decisions regarding the role of the conductor. These decisions are made by the individual musicians and by the orchestra as a whole.

6.2.6 Technical skills

In the interviews technical skill is presented as a prerequisite to musical freedom as well as a limit to the freedom (see 5.4.5). Mastery of the instrument is necessary to be able to perform at the required level as well as to concentrate on the orchestral context while

playing. Technical skill refers not only to how fast the musician can play scales or other technical proficiency, but also to musicality as a developed skill.

In the background chapter, managing the pedals is described as a major technical problem for harpists (Chaloupka, 1979/2002; Marson, 2005; Rose, 2007; Rosen, 1993; see 2.1.1). This is reflected in books on orchestration since most of the text about the harp in these books deals with how the pedal system works (Adler, 1982/2002; Berlioz & Strauss, 1843/1991; Blatter, 1980/1997; Del Mar, 1983; Forsyth, 1914/1982; Jacob, 1931/1947; Mancini, 1962/1986; Piston, 1955/1973; Widor, 1904/1946; see 2.2.2). The difficulties with using the pedals can be connected with difficulties in writing harp parts: if the composer does not know how the pedal system works is it difficult to write an idiomatic part.

These problems are also related to the notation system for pedals since in most cases harpists have to do the markings before the rehearsal (see 2.1.1; 5.1.1). The preparation for practising the pedal-work is also unique to harpists. And finally, the problems are related to playing the part, since a pedal change is not usually done at the time the string is played. Problems also relate to the number of pedals required and how quickly they should be changed.

However, difficulty with the pedals is not as prominent an issue in the interviews as it is in the background chapter. The interviewees are aware that pedal mistakes are easily made, but it is not a primary concern for them when playing in the orchestra. They are aware of all the practical difficulties of the pedals: setting them in time, having a notation system that helps them, preparing, etc. (see 5.1). The material in the background chapter shows the same awareness but mostly aims at learning about the problems. The musicians who were interviewed are highly skilled, and the technical problems are not as prominent for them as they are for students. For these professional harpists pedalling skill can possibly be seen as internalized bodily knowledge or 'second nature' (Janik, 1996).

This does not, however, imply that skills are not consciously considered. The time the harpists spend on editing and practising a part is conscious preparation for learning (see 5.1.1; 5.1.2). There is a conscious internalization of the specific knowledge required. General knowledge is required, such as the overall skill of the musician, as well as specific knowledge adapted to the context. For example, in one of the interviews it was noted that a technical aspect such as the use of pedals became a part of the overall knowledge of the instrumental skill, which can be seen as internalized knowledge (see 5.1.3). Nevertheless, in the same interview it also emerged that this internalized knowledge had to be maintained and renewed. In the example, the pedalling in a particular piece had to be practised.

The skill of knowing how to play an instrument cannot therefore only be regarded as an internalized knowledge, or expansion of the body (Merleau-Ponty, 1945/1997). It is also a knowledge that is constantly re-constructed. This way of describing knowledge is close to the concept of techné (Aristotle, 1995b) – that some kinds of knowledge

have to be maintained. What emerges in the interviews is that contextual knowledge is not enough for the ongoing professional work, nor is the knowledge that proved to be enough when gaining the position. Constant development of skills is required, and not only to maintain knowledge already acquired (see 5.4.3; 5.4.5). Skills also have to be internalized for specific situations. According to Janik (1996) reflection only has to occur when something goes wrong, otherwise things work as they 'usually do'. Thus reflection can be related to learning something or changing something. A professional musician has to internalize the knowledge regarding the playing of the instrument as much as possible. The more the musician can work without constant reflection the more he or she can focus on contextual issues. A high skill level gives the musician the freedom to perform at a high level. There is also a difference between embodiment or internalization of techné knowledge and phronesis knowledge. Phronesis knowledge, such as musical knowledge, has to be internalized to be usable, whereas techné as a skill has to be maintained to be embodied.

A musician's skill viewed through Johannessen's (1999) model may, to some extent, be seen as knowledge that needs to be practiced to be maintained. When performing music, internalized knowledge can be regarded as changing and contextual. This sometimes makes it difficult to distinguish between intelligent capacities and internalized knowledge (Ryle, 1949/2002). The notion of embodied knowledge offers a way to describe knowledge as internalized. Input from the senses is an important basis for reflection (see 6.1.2).

The interviewees stated that great effort is made to overcome difficulties specific to the instrument when playing in the orchestra (see 5.4.5). Visual problems – having three different visual points that need attention – are overcome with practise. Mostly this is done by practising playing without needing to look at the strings and playing parts by memory, thus, on some occasions, attention to two of the visual points could be reduced (see 5.2.1). These visual problems are described by others as critical when playing in the orchestra (Chaloupka, 1979/2002; Marson, 2005; Rose, 2007). But these problems could also be blamed on external factors such as insufficient rehearsal time or the different spacing between strings on different brands of harps (see 5.1.2). The ability to solve these visual problems can also be seen as a skill that has to be developed and assessed in the orchestral context. Not all parts have to be played by memory, not everything in parts has to be played or cannot be played without looking at the hands for placing the fingers on the strings. Thus the skill is not only mastering the instrument technically but also the ability to assess technical difficulties in the orchestral context.

Pre-rehearsal preparation of marking of the part and knowing it well before the first rehearsal can be seen as instrument-specific, but preparation can differ depending on the orchestra the harpist is playing with (see 5.1.1; 5.1.2). An orchestra that has a general good overall knowledge of sight-reading is different to play with than an orchestra that does not sight-read very well at the first rehearsal. However, the harpist usually needs to be extensively prepared before the first rehearsal when most other

musicians can sight-read at the first rehearsal although they often prepare their parts in advance. A developed skill may be the ability to perform when the conditions are not perfect. As Aristotle claims, it is possible to perform a task under conditions that are not optimal when one has enough experience and practical knowledge (Nussbaum, 1993).

The interviewees asserted that a musician has to be prepared for the unexpected (see 5.4.4). Unexpected situations that were described included sight-reading at a performance, or reacting quickly in the present situation. These two types of situations can be seen as fundamentally different even if they both require contextual skills based on experience, which can be practised. Sight-reading can be facilitated by structural understanding of music (Lonnert, 2013). Reacting to what is happening in the present is a developed contextual skill based on perception; an example from one interview is when a singer entered in the wrong place and the harpist had to follow the singer (see 5.4.4). Knowing how to solve these problems is dependent on experience and judgement (Johannessen, 1999; Johannessen, 1999/2002; Nussbaum, 1990).

Technical skills of a musician, both instrumental-specific and contextual orchestral playing, should be high in a high-level orchestra. According to Ericsson, Krampe and Tesch-Römer (1993) the level of the performance is directly related to the amount on time spent in deliberate practice. However, their study is based on education as a soloist and does not deal with learning contextual knowledge as occurs in an orchestra. From this study, it is evident that the amount of contextual learning in an orchestra significally affects the amount of knowledge gained.

Musicians' technical skill is knowledge that has to be maintained and constantly developed in the context in which it is going to be used. These skills developed within orchestral playing can be related to perception, experience, and judgement but also to conscious internalization of knowledge.

6.2.7 Interspace

The interspace – musical, physical and personal interpretive space – for the musician in the orchestra can be examined from different angles. Some of the opportunities for musical freedom have to be gained, and others have to be given. In this chapter I suggest that the people who can give musical freedom are the composer, the conductor and one's colleagues. But a musician can also claim and gain some of this interspace by his or her knowledge. The notion of interspace in the interviews was evidenced mostly by the issues that restricted the musicians. Nussbaum (1990) claims that the level of competence gives artistic freedom within limitations. Bowie (2010) indicates that limitations may be important for musical expression.

The interspace given by the composer is determined by how the part and the orchestral work are orchestrated. This includes whether the harp part is idiomatic, or playable, or

if there are mistakes (see 6.2.2). Choosing how to score for harp is also important and, as described in 2.2.2, there are several approaches to scoring for harp in books on orchestration: one is using the harp to add colour to the orchestra, another is using the harp as a accompanying instrument, a third is as an instrument integrated in the orchestra, but the harp is seldom seen as a melodic instrument (Adler, 1982/2002; Berlioz & Strauss, 1843/1991; Blatter, 1980/1997; Forsyth, 1914/1982; Jacob, 1931/1947; Piston, 1955/1973; Rimsky-Korsakov, 1913/1964; Widor, 1904/1946; Woodward, 2003; see 2.2.2).

There is also a tradition of harp cadenzas in orchestral works. From these different ways of orchestrating, different ways of playing emerge for the musician. A cadenza offers a different kind of interspace for interpretation than an accompanying part (see 5.4.6). But, as observed in one of the interviews, an accompanying part also has to be contextually evaluated by the musicians (see 5.4.3), noting that the part can have different functions. For example, it can be following the soloist or leading the soloist. The musician's knowledge, the musician's interpretation of the part and the context in which it is played provide the interspace.

The opportunities for showing one's musicianship depend on the position in the orchestra and the part. Examples from the interviews include using one's contextual skills to play a part of a phrase that is continued by another musician, which is different from playing a cadenza (see 5.2.2; 5.4.3). It is also different to fit in with a section than it is to be a section leader (see 5.2.3). As related in one of the interviews, a musician who accompanies a dancer on stage does not have the same freedom as a musician playing solo and nor can the conductor give more freedom than the dancer allows (see 5.3.1). Knowing the context of the part is vital to the concept of freedom.

Interspace is also dependent on skill in the sense of technical and musical knowledge as well as on contextual orchestral knowledge. Being able to perform what one wishes to perform gives freedom. If the level of technical skill, musical skill or contextual skill is not high enough it will limit the musician. Knowing the context may include knowing how the part interacts with other parts in the orchestra and knowing possible interpretations intrinsic to the part.

A part needs interpretation; it is not a fixed recipe. A part contains possibilities for musical interpretation. Performance of a part is restricted by the musical style required. In some situations this means that knowing the context, and one's role in the context, will give musical freedom. It can include interpreting the intentions of the composer. A skilled musician may understand the effect the composer intended even though the composer did not know how to notate it. This is illustrated in one of the interviews when discussing the interpretation of the glissandi in *La Mer* in which different solutions give different effects (see 5.1.1). The anecdote about Wagner that Strauss (Berlioz & Strauss, 1843/1991) recalls opens up the possibility of the musician changing the parts in Wagner's work, if the musician has knowledge of the composer's musical intentions. Rose (2007) believes the harpist's responsibility is to interpret the

intention of the composer. However, Del Mar (1983) claims that the harpist may misunderstand the effect wanted by the composer and make unnecessarily changes. He indicates that harpists too easily make changes in parts and take too much freedom due to their previous experiences of unidiomatic parts and composers' lack of knowledge. Helmerson (1990) explains that the act of interpretation of the score is understanding the intention of the composer and understanding the context of the score.

A musician may claim musical interpretive space through skill, confidence and musical personality, but such space must also be given by others such as one's colleagues and conductor. Trust can develop between conductor and musician and the conductor can give the musicians freedom to perform. One of the interviewees observed that conductors may not only judge the particular musician but also his or her own experience of others in that position (see 5.3.1). Conductors' experiences of harpists making mistakes affect the amount of freedom given to other harpists. The trust between musicians and conductors has to be gained over and over again since orchestral playing is a skill that has to be practised.

The interspace obtained depends on how one regards oneself as a musician. If the image of the self is only as a soloist then the solo passages are the interspace given. But it was evident in the interviews that when musicians considered themselves to be orchestral musicians the interspace was larger since even a single note could be important in the context. There had to be a change of focus as well as a maturation process to be able to reconsider one's role as a musician in the orchestra. Musical freedom was obtained through being a part of the orchestra and being able to contribute a personal interpretation.

6.3 Aspects of expert orchestral playing

All the interviewees mentioned tone quality, tuning and ensemble playing as important to being a good orchestral harpist. Qualities may be understood as highly developed skills. These qualities may also be seen as both personal skills as a musician and as contextual skills of an orchestral musician.

6.3.1 The tone

In the interviews the first sign of excellent musicianship in the orchestra that was mentioned was the quality of the tone (see 5.4.1). Good tone is the sign of an excellent musician. The interviewees also emphasized that the tone should be loud enough. For example, playing in a large venue or playing in a large orchestra requires a loud tone. Sufficient volume was important within the orchestra in order to hear other harpists' parts; this was something that was not considered obvious. This means that it should

be possible to hear the tone in the concert hall and throughout the orchestra as needed. However, it was also noted that the harp should not be overplayed since that will affect the quality of the tone.

Playing loudly for a long time is also physically demanding for the musician (see 5.1.2; 5.4.1; 6.2.1). To play at a physically demanding level may be regarded as a working environment problem since musicians need to recover between productions (Liljeholm Johansson, 2010). Whether one needs to overplay is dependent on the overall performance level of the orchestra, the listening ability of the musicians that form the orchestra, and the knowledge and interests of the conductor (see 5.3.1; 5.4.1). An experienced conductor with an interest in orchestration will make it possible for the musicians to perform their parts to the best effect. The tone quality and volume required in the role of orchestral harpist are different from those required as a soloist. Very soft nuances are not required in an orchestra.

Tone quality is evaluated in terms of the aesthetics of the situation. Shameyeva, in her thesis (1994) and in the interview for this study, observes that there is a distinctive approach to tone quality from the Russian school, especially regarding techniques of finger articulation (see 5.4.1). This is not solely her perspective since in other schools such as the French school, described by Renié (1946/1966), and the Salzedo school (Salzedo & Lawrence, 1927/1929) the articulation and movement of the wrists and arms are important to the quality of the tone. Cahn (1992) connects the tone, and phrasing and expressiveness, to the individual musician's musical personality. Smilde (2009b) goes a step further when she links tone with identity. This individual musical personality is one of the critical factors for a competitive audition (Davis, 2004). As well as having a personal tone, the musician should have the ability to adapt his or her tone to the style of the orchestra. In the interviews (see 5.1.3; 5.4.1) two harpists recalled that they were trained in the tradition of their teacher who also worked in the same orchestra. As a consequence, the style of the orchestra, and the style of the tone, was transmitted to the students. Being a part of a tradition is related to one's identity as a musician.

Since it is important to be able to collaborate with other musicians (Davis, 2004) it is important to be able to blend with other instruments when needed. This kind of flexibility is also important to the quality of an orchestral musician's tone. The quality of the tone is particular to the instrument played and to the musician's knowledge of that instrument. Waltham (2010) explains that on any individual harp different strings have different decay times. The musician playing a harp must consider the different decay times, thus the knowledge of the specific instrument might be significant. The harpist also has to consider how sound radiates differently from different registers (Waltham, 2010). One of the interviewees drew attention to issues of sound projection (see 5.4.1), which may be influenced by the location of the harp in the orchestra, and by the musician's technique, skill and knowledge of the particular instrument.

Key issues concerning tone quality are that: it should be loud enough but also nuanced, it should blend well with other instruments when needed, it should be personal, and it should be in the required style.

6.3.2 The tuning

From the interviews good tuning emerged to be one of the main qualities of excellent orchestral playing, and different practices regarding how to tune and when to tune were described (see 5.4.2). What the interviewees regard as high quality is based on a complex web of choices in which the harpist must know the parts, the score, the instrument he or she is using as well as know about other instruments and how other individual musicians in the orchestra play. Much of this knowledge is contextual to the specific orchestra as a collective and to the individuals that make up the orchestra.

In the background chapter, tuning is described as an instrument-specific practical problem (see 2.1.3). In previous eras tuning was more difficult due to lower quality strings (Marson, 2005; Rensch, 2007). Devices such as portable tuners and microphones have been developed to make tuning easier (Fedson, 2006; Marson, 2005). Even though there have been helpful technical advances, some problems that affect the tuning such as the condition of the harp and the temperature and humidity have not changed (Fedson, 2006). Different materials used in strings (Waltham, 2010) react differently to temperature changes and humidity. Yeung (2006) contends that while nylon strings do not break as easily as gut strings they do not have the same sound quality. Therefore the harpist must assess these different parameters and choose whether the sound quality is most important.

Harpists have to tune their instruments before a rehearsal or concert (see 5.4.2). When doing this they have to predict the tuning of the orchestra. Even though an orchestra usually has a set pitch to which they tune, the orchestra does not always stay in the pitch it tuned in, which must be taken into account by the harpist. Harpists cannot adjust the tuning while playing (Blatter, 1980/1989; Del Mar, 1981) a fact which was described by an interviewee as a major problem in the profession (see 5.4.2).

The tuning should be centred around the repertoire, as Bullen (1995/2009) and Marson (2005) note. According to the interviews musicians have to know what is important in the part, which notes have to be in tune with what instruments and must make choices according to the priorities of exposed passages (see 5.4.2). Not only do different instruments in the orchestra have different tunings; different musicians also have different perceptions of tuning. In addition the individual harp's tuning limitations due to its construction must be considered. Another issue is that the string changes pitch when played since the attack pitch differs from the pitch that sustains (Waltham, 2010).

To be able to achieve good tuning it is important that the harp is in good condition. This concerns the age and wear of the harp, and also its regulation (Cunningham, 2006; Yeung, 2006). As observed in the interviews, a harp that is not properly regulated or cannot be regulated properly is difficult to tune since choices have to be made as to which notes are important (see 5.4.2). These choices have to be made with knowledge of which passages within the orchestral part can be out of tune and which passages must be in tune. A discrimination of the contextual importance of different passages in the part has to be made. The description in one of the interviews of when a conductor was unaware of the construction of the harp exemplifies this problem (see 5.4.2).

Tuning concerns contribute to the complexity of harpists' working conditions. Even though devices such as tuners and microphones have made it easier, it is still difficult to tune in noisy surroundings. Thus harpists always have to arrive early to tune (Bullen, 1995/2009; Del Mar, 1981; Yeung, 2006). One of the interviewees observed that if the harpist arrives early at the venue it might be possible to ask colleagues to be quiet in order to tune (see 5.4.2). But ideally the harpist should tune as close as possible to the rehearsal or concert. The harpist often has to tune during breaks, and will therefore seldom get the rest that other musicians get. When on tour, or on other occasions when it is not possible for the harpist to tune properly, it is difficult to maintain good tuning at a rehearsal or a performance.

The difficulty of not being able to adjust tuning when playing is a source of practical problems. Most instruments in the orchestra can adapt their tuning to what is happening in the orchestra. Some instruments cannot adapt, such as pre-tuned percussion and keyboard instruments. The harp requires that tuning is done before playing, thus revealing the knowledge and skill of the harpist. Tuning was considered to be one of the most fundamental aspects of quality by the interviewees, and knowledge of how to handle all of these different issues was regarded as something musicians can develop. The interviewees pointed out that all decisions about tuning had to be made before the actual playing.

6.3.3 Ensemble playing

The quality of ensemble playing can be defined as the contextual skill the musician uses when playing together with the other musicians in the orchestra. The quality of ensemble playing is complex since it is related to the qualities of tone and tuning, and skills, as described above, and further issues.

The timing, in the sense of playing together, can be seen firstly as a contextual skill. The volume can be seen as a technical skill but also a contextual skill, and a judgement skill. The colour of the tone, choosing whether to use a soloistic sound or to blend with other instruments in the orchestra, is contextual but performance requires technical skill. Phrasing is basic to all performances of music, but can be a contextual skill when playing together with others such as in an orchestra. Knowing one's role and the context

can be regarded as propositional skill, for example, knowing the score or when the piece was written. But knowing one's musical role in a piece can also be contextual. An example from an interview is the observation that in order to play one or two notes in a musical phrase the musician has to know the whole phrase (see 5.4.3). The musical role requires being part of the context and contributing to the context. Good ensemble playing may be based on enhanced technical skills and enhanced listening skills. It is also dependent on experience. One of the interviewees stated that learning to consider the context and to listen to the context is related to experience and that it takes time to gain this experience (see 5.4.3).

An enhanced listening skill, based on contextual listening, is not only about tone quality or tuning as described earlier (see 6.3.1; 6.3.2); it is about how the tone quality and the tuning fit into the orchestral context. Volume and tone quality can be regarded as technical issues, and as issues that have to be evaluated in the orchestral context. One of the interviewees emphasized that the ability to listen and to react appropriately to what is heard is the main area of knowledge that is learnt in the orchestra (see 5.4.3).

Frimodt-Møller's (2010) views on coordination may apply to the knowledge of musicians in an orchestra. They must share common knowledge. Their expectations of how to act in certain situations should match those of other musicians in the orchestra. They should have the same goal. This can be associated with the concept of timing as a contextual skill. The concept of timing is related to the concept of time, as in Augustine's (n.d.) analysis. Memory, observation and expectation and their complex relationship when playing music can be developed in context. One of the interviewees explained that everything that has been played must be taken into consideration as well as what is happening in the moment (see 5.4.3). The context thus cannot be separated from the role the instrument has at the moment when playing. This relates to Fjelkestam's (2009b) comment that the present reflects the past and the future.

Aristotle's (Nussbaum, 1990) description of how choices are made can deepen the understanding of ensemble playing. Aristotle shows that a rational choice cannot be made since different solutions are not comparable. He shows that since it is always a particular case that has to be solved, one cannot apply a general solution. These two points can be applied to the orchestral situation since it is contextually based and always a particular case. Aristotle's third point is that, when making a decision, using emotions and imagination is important. Judgement is based on the particular, and imagination and emotion are a part of practical knowledge. Playing the right notes in the right place is not enough for an experienced musician. In one of the interviews this was regarded as a position a young, inexperienced musician might adopt (see 5.4.3). Musical meaning should be created and this cannot be made without emotion and imagination in an orchestral context.

The interpretation of the score, the tone and the ensemble playing may also be particular to the style of the music and the period in which it was written. The parts written for earlier kinds of instruments (Clark, 2007; Fabris, 1991; Galassi, 1991;

Lawrence-King, 1991; Marson, 2005; Rensch, 2007; Zingel, 1992; see 2.1.2) cannot be played now without considering early music interpretation (Lawson, 2003; Spitzer & Zaslaw, n.d.). In contemporary practice, issues concerning kinds of instruments may need to be considered since different kinds of harps were used in the 20th century and the construction of the pedal harp has changed (Marson, 2005; Widor, 1904/1946; Zingel, 1992; see 2.1.2). This kind of knowledge is related to the contextual knowledge of music that featured in the interviews; a contextual understanding of a piece influences the interpretation of the piece (see 5.1.1).

To be able to perform what one wishes to perform depends partly on technical skill – if the musician does not have the technical proficiency to perform something it is more difficult. Playing is easier with greater technical ability. Musical knowledge can also be seen as a technical skill; it is not only, for example, how fast the fingers can be moved. Ensemble playing is not foremost about technical skill, although the technical level is important in how something can be performed. Greater mastery of the instrument leads to greater freedom when performing.

Aristotle (Nussbaum, 1993) proposed that with experience, external circumstances that make an action difficult can be overcome. Some interviewees recommended that an orchestral musician should always be prepared for the unexpected and that being prepared was a part of the experienced musician's knowledge (see 5.4.4). It was important to be able to do a good job even if the circumstances were not ideal. Reaction time was also important. If something went wrong somewhere in the orchestra all musicians had to quickly find a way to solve the problem. Ensemble playing skill for experienced musicians is what Erden, von Krogh and Nonaka (2008) describe as collective improvisation, the highest level of group tacit knowledge. This can be related to Wittgenstein's reflections on rule following. Wittgenstein (1969/1979) notes that it is easier to assess the abnormal situation than the usual situation. Learning how to apply rules must occur in action, and is dependent on experience and judgement.

For ensemble playing it is essential to attend to both the whole and the details at the same time. Interviewees drew attention to essential details, such as the tuning of individual strings, but this tuning also had to be considered in the context of the whole harp part and the whole orchestra (see 5.4.2). Musical choices, such as the colour of an individual tone, also had to be considered in terms of the orchestral context. All choices made by the individual musician had to be considered in terms of the orchestral context. Care for details and decisions about how to perform these details were central (see 5.4.3). This can be seen as adapting previous knowledge to the current situation (Janik, 1997). The knowledge of one's role in the orchestra and meticulousness with details are thus combined.

Caring about details entails doing what is needed, contributing one's personal expression and being aware of the context. This focus on both the whole and the details at the same time relates to H. Larsson's (1912) concept of intuition and to Aristotle's concept of deliberative phantasia (Nussbaum, 1990). When playing music, extremely

quick and complex decisions must be made, but always in relationship to what the surrounding musicians are playing. These decisions cannot be made discursively but have to be made intuitively and can be considered as a whole.

Care for details and the choices made can also be understood in light of the importance of emotions in decision-making (Landquist, 1906; Larsson, 1912; Nussbaum, 1990) and thus one's personal musical expression. Constant reflection upon impressions from the senses must occur (Locke, 1992) when playing music. The sense that is most dominant is hearing, but sight and, to an extent, the tactile sense and combinations of senses are also important. Ensemble playing, in its multifaceted nature, might be seen as the core of orchestral playing. The knowledge is basically based on listening in combination with contextual, musical and technical skills. Important elements are imagination and emotions.

6.4 Motivating forces

What are the motives for becoming a musician, for being a musician in an orchestra and what is the motivation for continuing to develop as a musician? Some of the issues which emerged from the interviews are the importance of an audience and the importance of being challenged.

6.4.1 Joy

The interviewees described the joy of playing in an orchestra as firstly dependent on the joy of music and music making (see 5.4.6). The joy of music making was dependent on making music as a collective, and having colleagues to work with. The enjoyment of being a musician was also related to the possibility of enjoying one's own skill, having a professional identity as a musician and of being appreciated when doing a good job. An interest in music, or love for music, is one of the main reasons for becoming a musician. In the interviews this interest was expressed in terms of performing music, even if listening to music was also important. Orchestral music, such as symphonic music, opera and ballet, is a central form of music making in the Western European classical tradition and many major works have been written for this ensemble. When playing in an orchestra, musicians play music that is the core of the tradition.

Musicians may evaluate the overall quality of the music differently from the quality of the part. This is illustrated in the interviews in which parts are discussed in terms of how idiomatic they are in contrast to the quality of the music (see 5.1.1). There might be a difference between playing a piece of music that the musician enjoys and a well-orchestrated part that the musician enjoys.

Often exposed parts are technically difficult and may cause nervousness. For the musician, this can be seen as doing a difficult task yet being able to handle it as in Csíkszentmihályi's (1997) description of flow in which task difficulty matches the skill level. Deriving joy from skill may occur in contextual tasks as well as in soloist tasks. Playing together in an orchestra was considered more stressful and challenging than playing as a soloist since all musicians depend on each other (see 5.1.2). There was professional pride in being able to handle difficult tasks, which became a part of the orchestral musician's identity. Musical choices were made to serve the context rather than to 'cheat' (see 5.1.1).

The joy of music is related to the orchestra as a collective: playing music together with colleagues. Working with skilled musicians such as colleagues, visiting soloists and conductors was considered rewarding (see 5.3.1; 5.3.3). There was a special joy in working with those that one held in great esteem. The opportunity to learn from these colleagues was important. There were also moments when playing together worked extremely well, often due to good cooperation with a conductor, and those moments were seen as a special joy. The orchestra as a musical collective was considered very special, especially when all musicians worked well together while performing at a high level.

Added to the co-operative aspects of the highest levels of the group tacit knowledge model of Erden, von Krogh and Nonaka (2008) are, thus, emotional aspects. Working with colleagues, belonging musically and socially, in an orchestra was considered important (see 5.4.6). One reason was that being a musician could be a very lonely job. A free-lance musician's time may be consumed with non-musical issues such as administration. Another aspect was being appreciated. There was joy in being appreciated by one's colleagues and conductor for doing a good job. Being able to demonstrate one's musicianship, for example, when playing exposed parts such as cadenzas, knowing that everybody listened, was related to enjoying one's own skill (see 5.4.6). The orchestral collective as a working environment and as a creative unit was important. The collective was also a source of inspiration toward personal development (see 5.3.3). The orchestral context can be seen not only as a professional context but also as an educational environment for professional musicians. Learning in the context is often discussed in relation to learning a profession (Dreyfus & Dreyfus, 2000; Johannessen, 1999; Lave, 2000) but not in relation to professional development.

The emphasis on emotional qualities, such as what musicians enjoy, may be applied to the notion that emotions and imagination are vital components of practical knowledge (Nussbaum, 1990). Emotions are rational in developing aesthetic knowledge. A choice without emotional content is an indifferent choice. It was important to the interviewees to feel they were contributing substantially to the performance and making a difference in the orchestral context. Enjoying one's own ability was important as well as the professional skill attained. The personal role and identity as an orchestral musician was also a source of enjoyment. It was not only important to maintain this skill but also to

develop it. In conclusion, it emerged from the interviews that emotions, professional skill, co-operation and knowledge development were related.

6.4.2 The ears of your peers

The colleagues were described by the interviewees as the orchestral musician's most important audience (see 5.3.3). Unlike an audience member's evaluation of a concert or a conductor's evaluation of a short period of work, one's colleagues could make a continuous evaluation over a long period of time. Kvale and K. Nielsen (2000) describe different kinds of evaluation through practice. Evaluation through practice, such as consequence evaluation and continuous evaluation, can be done by colleagues.

Through these evaluations the colleagues are collectively responsible for maintaining orchestral standards and for the development of the orchestra. It was important to the interviewed musicians to continue to improve as musicians. As in Ericsson, Krampe and Tesch-Römer's (1993) description of expertise and eminence, for these musicians it was not enough to perform well compared to other musicians. Rather, they aimed to do an outstanding performance. Not only did they want to maintain the standard they had when gaining their positions, but they aspired to continuously raise their level (see 5.4.5).

Musicians expect colleagues to judge their performance (see 5.3.3). As an extreme result of this, bullying systems emerge towards musicians who are not considered to be up to standard (Liljeholm Johansson, 2010). She also observes that this practice is sometimes used by orchestral management to maintain the performance quality of the orchestra. The interviewees considered appreciation from colleagues to be more important than appreciation from other listeners. The colleagues could support and motivate the musician to maintain a high standard.

It is important to an orchestral musician to listen to other musicians and to be listened to by other musicians. This does not mean that orchestral musicians do not care about the audiences or conductors but that appreciation from their colleagues mattered more since, due to their deep knowledge about the individual musicians in the orchestra, they could evaluate a performance differently. One of the interviewees in the study described how everybody in the orchestra listens to a musician who plays a solo and how important it is to the musician (see 5.4.6). It is important to have a knowledgeable audience and to demonstrate that one is a skilled musician.

Appreciation from other musicians also forms the musicians, as one of the interviewees said: 'I think you get your confidence through the eyes of others' (see 5.4.5). Positive stress may be an important factor for orchestral musicians. In one of the interviews, working together with other musicians was seen as more demanding than playing a solo concerto (see 5.1.2). This stress is related to the interdependence of colleagues who

work together to create a good result. Consequently, collegial evaluation is an important concern within orchestral playing.

6.4.3 To be challenged

Having an audience and enjoying working as a musician were motivating forces for playing and developing as an orchestral musician (see 5.3.3; 6.4.2). Other motivating forces were also described, especially the notion of being challenged as a musician. When playing in an orchestra there are restrictions on how one may perform. However, in the interviews there are accounts of playing a part at the limit of what was accepted. The ability to play music close to the limits, frames, or rules, but still within them can be seen as an indicator of skill (Bowie, 2010; see 3.4). This can be illustrated by the statement that not only should a musician play better each time; it should also be different each time (see 5.3.3). There should be a moment of surprise for the listener.

This means that a musician must play within the language game (Wittgenstein, 1953/2009; 1969/1979; 1980/1984) which makes the music understandable in the context, but also have the knowledge to develop the language game played. To have a wide range of performance possibilities within the limitations can be a sign of a skilled musician. It relates to the ability to discriminate within a huge number of examples, think analogically, understand similarities, and an enhanced ability to combine and understand (Johannessen, 1999; Larsson, 1912; Nussbaum, 1990; Wittgenstein, 1953/2009).

According to Janik (1989/2002), experts are those who are interested in problem-solving and in developing their own knowledge. Their main interest is not in what they already know but in learning new things. They also have innovative ways of solving problems and creating new standards. Ericsson, Krampe, and Tesch-Römer (1993) describe eminence as being able to reach beyond the knowledge of the expert in an innovative way and to extend the standards. This means that what is considered to be expertise and eminence continuously changes. This explanation of eminence is comparable to Janik's explanation of expertise.

The concepts of expertise/eminence and working at the limits resonate with what was expressed in the interviews. This relationship is evident in those who have the desire and the courage to break the rules, or to try to extend what is possible in an orchestra. The interviewees wanted to continually improve as orchestral musicians (see 5.4.5). Losing interest in improving is not well regarded among colleagues (see 5.3.3) and it is important that colleagues notice when a musician plays well (see 5.3.3). Bowie (2010) observes that skilled musicians have the ability to work within the given framework but also close to, but not necessarily within, the limits. The importance of personal interpretation can be illustrated by the statement by the interviewee who claimed that it was important to do what he wanted in the moment in spite of knowing it was considered wrong in that position (see 5.2.3). Playing close to the limits challenges the

frames of orchestral playing. It may contribute to personal development since the musician's knowledge is also challenged. The musician is challenged to maintain standards and to continually improve (see 5.3.3; 5.4.5). The restrictions of orchestral playing can be seen as a major challenge: to express oneself as a musician in spite of many layers of frames. The seeming contradiction of the situation is seen in showing one's own musical personality while, at the same time, being a skilled ensemble player, able to fit into the context.

Orchestral playing not only demands constant awareness of what is going on but also requires quick reactions and decision-making. Being ready for the unexpected depends on enhanced listening ability developed through experience (see 6.1.2; 6.1.5). The challenge is to make the right decisions in the context, together with all of the other musicians who also individually make decisions. Decisions made have a clear auditory effect and will always receive an immediate evaluation. All decisions influence how the rest of the piece will be played. They influence the total outcome of the interpretation of the music. All decisions made by individual musicians influence all other musicians as well as the whole. An unexpected situation challenges not only the individual musician, but the whole group (Erden, von Krogh & Nonaka, 2008).

As observed earlier (Hager & Johnsson, 2009; Parasuraman & Purohit, 2000; see 6.1.6), in the academies, musicians were often trained mainly as soloists consequently a change of role was necessary to become an orchestral musician. The interviewees considered the challenge of playing in an orchestra to be larger than the challenge of playing solo due to stress factors and contextual issues. Their interest in learning to work together with other musicians in a very complex situation can also be seen as a commitment to development for these high-level musicians. All musicians interviewed also had careers as soloists and played chamber music outside of their orchestral position. This relates to their interest in music, described as the joy of playing great music (see 6.4.1). It may also be a response to what Liljeholm Johansson (2010) and Parasuraman and Purohit (2000) describe as lack of freedom within the profession of an orchestral musician since it develops other musical roles.

In order to be able to make one's own musical decisions it is important to maintain high standards as an orchestral musician. A recurrent theme in the interviews was that talking about the profession also meant talking about education from their experiences as learners and as teachers (see 5.1.3). Teaching can be seen as a part of the musician's profession and as a means of gaining knowledge as well as of transmitting knowledge. Teaching can also be regarded as an independent music activity outside of the orchestra that contributes to overall music making. It is important that all musicians maintain interest in their work; part of this is the challenge to develop as a musician. These challenges may be associated with work in the orchestra, as well as other chosen activities.

6.5 Summary

Orchestral musicians require specific knowledge of orchestral practice. General musical knowledge is required, but this knowledge must be adapted specifically to the orchestral context. Gaining sufficient experience can be problematic during one's education, which may have consequences for learning orchestral playing as well as for participating in professional practice.

Consequently, formal, pre-employment education does not provide the main foundation for the professional orchestral musician. Learning and development of knowledge occur during the entire career. In this study differences were distinguished between musicians' professional development and learning as described in studies of students' learning. In orchestral playing there are skills that must be developed in the orchestral context. The development of these skills can be seen as aspects of quality in professional musicians. These skills include the musician's technical and musical skills as well as contextual skills.

There are distinctive aspects of quality; some of these are instrument-specific such as tuning for harp, although tuning is important for all instruments in the orchestra. In the same way, the tone can also be seen as both instrument-specific and general. However, while many of the requirements for ensemble playing apply to all orchestral players they also vary for different positions, different orchestras, or for different conductors as well as for different musical styles and pieces. An enhanced conscious listening ability based on judgement and performance skills is essential to orchestral musicians' knowledge. In this study quality aspects are shown not only to be related to the performing musician, but also to the listener.

Developing knowledge as a musician can be motivated by forces such as knowing about the audience members who listen and evaluate, the important role of music in the lives of the musicians, and the challenges a skilled professional may meet.

What emerges as crucial for orchestral playing is how important the contradictions within the profession are. The tension between personal musical interpretation and ensemble playing is important for the musician, as well as for the musical result of the orchestra as a whole. This tension must be delicately balanced. In addition, the musician's focus on details and the whole and the way these interact is an important aspect of the orchestral musicians' profession.

Chapter 7.
Concluding remarks

As described in Chapter 4, research on a specific practice can be used to transfer knowledge to another practice, as with Johannessen's (1999/2002) notion of analogical thinking. For example, the difference between playing first and second harp can easily be transferred to understanding other similar relationships in the orchestra. Research is also about creating structures, or facilitating understanding of a practice through structures (Cassirer, 1944/1972). This chapter further develops the issues in Chapter 6 regarding practical epistemology, music education and orchestral practice. In this chapter I also identify directions for further research. Finally this chapter attempts to present what Miles and Huberman (1994) describe as a quality criterion: an understanding of the possible consequences of the research (see 4.8).

7.1 On practical epistemology

As Janik (2005/2006) explains practical epistemology, he implies that there is not one single epistemology but plural epistemologies. In this chapter practical epistemology is considered from an aesthetic point of view, as embodied knowledge and in terms of assessment of knowledge.

7.1.1 Aesthetic knowledge

To define musicians' knowledge as knowledge is not self-evident from a historical perspective as shown in Chapter 3 (particularly 3.1.1; 3.1.6). But since this study is associated with theories on practical knowledge such as Johannessen (1999) and Janik's (1996) development of Wittgenstein's practice perspective this definition is a prerequisite. This choice is related to what B. Molander (1993) describes as a political statement. By choosing to name the craft of musicians as knowledge I make a statement to elevate this kind of knowledge to scientific knowledge. This theoretical standpoint implies that not only is propositional knowledge considered to be knowledge but that knowledge is more complex and not only that which can be verbalized. It is based on the assumption that human beings can demonstrate their knowledge through action.

Expressing knowledge which, by its very nature, is impossible to verbalize may be problematic, however, as Janik (1996) claims, it is possible to write about knowledge that is not verbalized even if it is not possible to express it in full. The epistemological standpoint that not all knowledge is verbal or is possible to verbalize can be traced to Wittgenstein's (1953/2009) idea that it may be possible to show what cannot be said. The German expression *künstlerische Gestaltung* offers a description of how an artistic expression can be shown. Learning to perform music cannot be verbalized in full since a student must play music to learn to play music. However, it is possible to speak or write about how to learn music, and words can be helpful in teaching and learning as well as in musical practice (Janik, 1996).

Pehrsson (2012) observes a tension between artistic research and scientific research, and suggests that scientific researchers can learn from methods and approaches in artistic research as well as the other way around, which requires openness from both sides toward each other. He emphasizes that it is important to communicate research, also from practice-based research such as artistic research. Another tension he notes is scepticism from musicians toward research. Within the domain of music, musicians can conduct artistic research and music educational research as well as conducting research from musicological, ethnological, or other perspectives. Research conducted by musicians, as described in 1.2.3, is practice-based research, or can be seen as artistically-informed research. This research bridges a gap that may occur between artistic research and scientific research. Communication of research is language-based although the research may be practice-based. I believe that music education research can be developed further in this direction with dual membership both in the traditional educational context and the new artistic research context without losing its identity. Thus practical knowledge can be investigated and verbalized. Conducting research is becoming a part of the portfolio careers of musicians and music teachers such as Åberg (2008; 2011), Cottrell (2004), Gaunt (2004; 2007; 2011), Johansson (2008), and Ljungar-Chapelon (2008). This development in the careers of musicians may change musicians' view of artistic research and music education research.

In this study, Johannessen's model (1999; 1999/2002; see 3.1.5; 6.1.1) proved to be useful when describing practical knowledge. Johannessen (1999) recommends his model for research into aesthetic knowledge and professional knowledge but cautions that all areas must be treated as particular cases. For myself, as a trained musician, it has been valuable to use an epistemological perspective that acknowledges and includes my practical knowledge in the field researched.

Music performance is also a changeable knowledge in which the language games (Wittgenstein, 1953/2009; 1969/1979; 1980/1984) are constantly negotiated and changing among the participants in the game played. This knowledge is carried by individuals and constantly dependent on the individuals that carry the knowledge. It is also transmitted between individuals. Individual musical personality is important to the performance. As a consequence, constant change is inevitable. The challenge of

researching practical knowledge is thus not only to verbalize aspects of un-verbalized knowledge but also to describe an elusive, continuously changing knowledge.

7.1.2 Embodied knowledge

This study demonstrates that musicians continuously embody knowledge. This embodiment always has to be re-constructed, or re-embodied. This is a part of the musicians' work, since embodying knowledge is a conscious act. When practicing an orchestral part one embodies the part, however, re-learning a part that has been learnt before is different since the previously acquired knowledge must be integrated in the re-learning. The embodied knowledge is changeable and always in process. The embodiment is always done for a particular situation.

Ryle (1949/2002) argues that knowledge can be internalized as habits, where one can do what one always did and it works in context. But he also argues that knowledge is constantly changing through reflection. Practical knowledge can include both of these elements, internalized knowledge and reflective practice. The internalized knowledge can be background knowledge but can also be knowledge that is practiced by the performer. In this study a finding emerged that skills had to be constantly maintained which can be seen as maintaining internalized knowledge.

However, when focusing on musical issues, internalization of knowledge can be regarded as different from technical issues or skills. Musical knowledge does not have to be a skill; it can also be a phronesis type of knowledge. Musical embodiment and performance embodiment are not the same. If you are a violinist and have not played the violin for 10 years you will not be able to play what you want. The musical embodiment might still be present in your body (as phronesis), but not the execution (as techné).

Internalized knowledge can be associated with the interconnection of mind and body. This understanding can be seen in the epistemological tradition of Aristotle (Liedman, 1997; Nussbaum, 1993) but also in more recent philosophies such as Ryle (1949/2002) and in the notion of 'knowing how' compared to 'knowing that'. It can also be related to a phenomenological view such as Merleau-Ponty's (1945/1997) theories of the body and mind, and his theories of perception. Experiences of this unit – the body and soul/mind – can be trained and Merleau-Ponty (1945/1997; Bengtsson, 2001) claims that these new experiences will change one's perception. Knowledge is always in a state of transition according to this point of view. The idea that the body and the mind cannot be separated is fundamental when speaking about practical knowledge, thus knowledge of performing music can never be an intellectual matter only, nor can it be described as only a physical expression.

The embodiment of musicians' knowledge is sometimes seen as an extension of the body in which the musical instrument becomes a part of the musician through

embodied skill. The embodiment of a skill is a prerequisite to performing music. The more that can be embodied the higher the possible technical level. However, in this study other aspects of knowledge are more significant. Musical knowledge that is not consciously reflected upon becomes embodied knowledge. All musical choices need to have a physical expression. This study suggests that the primary experience of embodiment is not the musical instrument as an extension of the body but musical expression as expressed through the instrument. Merleau-Ponty's (1945/1997) notion of a musical instrument as a tool that has been incorporated into a habit must be challenged since this study suggests that the habit has to be constantly re-constructed and adapted. Thus, even though some internalized skills can be considered to be embodied knowledge, embodied knowledge is primarily musical knowledge.

Other embodied knowledge is also evident in how musicians listen and see when playing in the orchestra. Listening, and choosing what to listen to, is a conscious act. Listening is embodied in the rehearsal work of orchestral musicians. Transmitting knowledge to colleagues through bodily movement can also be regarded as embodied knowledge. For example, musicians notice how others breathe in order to be able to play a phrase together. These different aspects of embodiment of musical knowledge can be further researched (see Bowman & Powell, 2007).

7.1.3 Assessment of knowledge

Continuous assessment of practical knowledge is made while playing in the orchestra. For example, in the formalized application procedures (Davis, 2004) that precede gaining an orchestral position different elements are tested: theoretical knowledge, skill, contextual knowledge, and social competence. This is what Haldin-Herrgård (2004) proposes in her research: models for visualizing practical or tacit knowledge. When evaluating musical knowledge it is possible and also common to measure musicians' tacit knowledge. In orchestral auditions, as well as in all evaluation of musicians, tacit knowledge is always evaluated. Playing music can be an articulated, but not verbalized, type of knowledge (Grimen, 2010). This can be contrasted with Haldin-Herrgård's (2004) statement that it is uncommon to measure tacit knowledge in organisations. Within music education and within orchestral institutions there are models to assess practical knowledge. This implies that knowledge can be explicit yet unverbalized. It may be important to emphasize the use of an assessment of this kind of knowledge within aesthetic practice and education in other fora when knowledge is discussed.

From an epistemological perspective the musicians' knowledge is multifaceted, and not easy to pin down in one model. However, using models can be helpful when describing knowledge that is performed. To make knowledge visible through other means than words, even if with the help of words, may be important in political discussions about education as well as in epistemological discussions and research. I believe that musicians, and other performers and educators in aesthetic professions, should develop

tools that help them discuss epistemological issues. This is important not only for discussions within the professions, but also for the role of aesthetic knowledge in education and society (see Pehrsson, 2012). Nevertheless Wittgenstein's (1966/1967) view that the expression in itself can be a carrier of meaning must be remembered. The main objective of music-making is not conducting research about it.

7.2 On music education

Dobson and Gaunt (2013) hope that their research on orchestral practice can influence the education of musicians. They aim to transform the research on musical practice into music education research, and to show the connection between education and practice. This section highlights different educational aspects of orchestral playing in a similar way.

7.2.1 Education of soloists or orchestral musicians

Several issues concerning music education arise from this study. One is an issue that has been described by Brodsky (2006), Hager and Johnsson (2009) and Parasuraman and Purohit (2000) that at musical academies, students are educated mainly as soloists and not as orchestral musicians. This issue can be problematized further. Christophersen (2013) notes a difference between the individualized learning of music at academies and the collective performance of music in general, something that is not solely specific to orchestral playing. Collaborative learning and issues within formal music education that contrast with professional practice (Luff & Lebler, 2013; Christophersen, 2013) should be examined. At an audition the musician's soloistic knowledge is a major factor since, as highlighted in this study (see 6.1.3; 6.1.6), he or she has to be good enough. It is not common for an orchestral audition to require only solo pieces; usually orchestral excerpts are also required. However, contextual knowledge is needed to be able to play these excerpts well. In order to play an orchestral excerpt convincingly one needs the experience of playing it in an orchestra. Some academies provide opportunities for students to gain orchestral experience while studying but usually not enough to acquire the required knowledge. This is recognised by Luff and Lebler (2013) who suggest that teachers should address the issue when teaching.

It is however not as simple as saying that high level orchestral training should be included in the education of musicians playing orchestral instruments in academies today. The issue should be considered in a wider educational context. Questions should be asked as to what kind of musicians the academies aim to educate. Is the aim to educate soloists? Is the aim to educate orchestral musicians? Or some other kind of

musician? Should music education also contain an element of 'survival of the fittest' – that only the best and the mentally or physically strongest become musicians? As shown in this study it is important to be musically and technically proficient as well as confident in one's own playing, and this may be developed through education. It is also noted in this study that interest in orchestral playing may not develop during the years of education but later in life. The education of excellent soloists may produce excellent orchestral musicians. However, this is not only an issue for educational institutions but also for orchestral institutions since orchestral playing is practice-based. There should be a connection between education and orchestral practice such as preparation for auditions. Connection and co-operation between professional institutions and educational institutions is also recommended by Johnsson and Hager (2008) and Smilde (2009b) as a result of their studies. It can be noted that several institutions already co-operate (Channing, 2003).

7.2.2 The responsibility of the academies

J. Davidson and Jordan (2007) describe how in music academies and conservatories, music activities such as orchestral playing are scheduled and part of the curriculum, in contrast to university music departments where they describe musical activities as extracurricular. Channing (2003) also observes that orchestral playing is often part of the curriculum in academies today. From this study, however, it emerged that teachers often recommend that students gain their experience of orchestral playing outside of their formal education (see 6.1.4). This means that, due to lack of opportunities within formal education, a system of non-institutional education is developed. A question emerges from this practice for music academies, in which students must get the experience of the work they are training for outside of their education. Should a good education for the student be dependent on personal interest and knowledge of the teacher? In contemporary academies orchestral training is provided, although in varying degrees. Should external education be requested by those in the educational system? Perhaps this parallels musicians' working situation in which musicians are required to practise their instrument and practise orchestral parts outside of their set working hours (Liljeholm Johansson, 2010). The working life of a musician cannot be regulated in the same way as many other jobs since it is based on individual needs, practices and choices. However, the way these choices are made may be related to instrumental practices and to structural elements in orchestral practice and in music education.

Should education depend on economic issues, structural elements or practical arrangements made by the student and teacher? For example, should a student who does not own a harp or has difficulties transporting a harp receive less experience and thus have more difficulty getting work in an orchestra? Should a piano player get less experience of orchestral playing because his or her teacher works as a soloist and does not have experience of or knowledge about orchestral playing?

From this study it is evident that teachers were important as role models, as soloists, as teachers, and as orchestral musicians. They are not only role models of orchestral players through their choice of profession, but also because they possess knowledge that they are able to transmit. The importance of the teacher should not be underestimated, nor the traditional conservatory model for learning music (see 3.2.1). There should not be a contradiction between the responsibility of the educational institutions and the teachers.

7.2.3 Knowledge and orchestral positions

Depending on which instrument the student plays, the need for practice and experience outside of the education system differs. Students do not have equal opportunities to play in orchestras. A violin player usually has an early start as an orchestral player and is able to participate in all projects, a tuba player is not needed in all projects and it is very rare that more than one tuba player is needed. There are different kinds of ensembles in which musicians can get experience such as brass bands, string orchestras and other set structures, yet in these, students do not have equal opportunities either. Another issue is that different kinds of knowledge are required for different positions in the orchestra. The orchestra is founded on the string section and, therefore, a woodwind section or a brass section will be structured differently for different styles and different pieces (see 2.1.2). There are also instruments that are used less often and can be seen as fringe instruments: for example, piano, percussion, and harp.

In light of this, several important issues concerning the education of orchestral musicians can be highlighted. Above all it is important to remember that the orchestra is not homogenous. Different instruments and different positions in the orchestra require different kinds of knowledge. A student who has mainly been playing first flute may have difficulty playing second flute. A double bass player must adapt to the section in a different way than a French horn player adapts to his or her section. Getting experience is more difficult for the 'fringe musicians' since they are likely to have fewer opportunities than other musicians. The amount of experience the individual student has is, of course, different, as is the amount of experience the individual student needs. While there are no set solutions for these different aspects, it may be important for educational institutions to consider the consequences of such unequal education since it affects the possibility of gaining an orchestral position.

7.2.4 The orchestra as a learning environment for students

Another issue to be considered is that much of the structure and material used in an academy orchestra is identical with those used in professional orchestral practice. In contrast with Liedman (1997), who describes education as a model of reality, academy orchestral playing is, therefore, not a model but the reality. It was advised in this study

(see 6.1.5) that experience should be gained whenever possible – in an educational environment, an amateur orchestra or a professional orchestra. The orchestral environment was the educational environment (Johannessen, 1999). Even if the orchestras were different, much of the contextual learning was the same. While in some respects an amateur orchestra is a different learning environment as illuminated in the experiences of and research by Frimodt-Møller (2010), Heiling (2000), and Marotto, Roos, and Victor (2007) these differences could enhance the individual's learning. The amateur orchestra as a learning environment for the aspiring professional musician is an area that can be researched further, especially since, as shown in this study, playing in amateur orchestras is often a required complement to institutional teaching.

7.2.5 Education of composers and conductors

Another educational challenge is what in this study can be seen as 'the Sisyphus struggle for harpists'. For more than 100 years harpists have been trying to educate composers, educators, and conductors about the harp. However, this has been a battle that has never been won since the same issues reappear over and over again. There are probably similar issues that players of other instruments have been discussing for just as long. It is possible that the further the instruments are from the core of the orchestra (see 2.1.2) the more ignorance from composers, conductors and educators is accepted. A composer might not write unidiomatically for violin or flute to the same degree as he or she might write unidiomatically for percussion or harp. This raises the question whether this kind of practical knowledge can somehow be included in education and whether such accumulated knowledge can be used rather than recreating it anew each time. It might also be important that composers learn in the performers' context since learning a practical profession is complex (Love, 2013). A discussion is needed regarding whether addressing these issues should be the responsibility of the teacher, and how the issues should be addressed in the structure of the academies.

The education of conductors is also an issue. It is suggested in this study that a conductor may develop professionally in a similar way to a musician, requiring experience to be able to work in a complex musical context. An inexperienced conductor may be focused on his or her own performance whereas an experienced conductor may focus more on the music and on how to get the desired result from the orchestra. An interest in quality of sound was mentioned as a quality criterion of conductors from a musician's point of view. However, within conductor education, work environment issues should be addressed, such as those presented by Liljeholm Johansson (2010) and Parasuraman and Purohit (2000). It should also be remembered that there are work environment issues and educational issues that are instrument-specific and relevant to conductors. It is important that these issues are addressed in educational contexts. If, for example, there are problems when piano students without enough orchestral experience participate in orchestral projects, or when a harp student

cannot attend rehearsals due to difficulties with harp transport they should not be seen solely as individual problems but also as structural problems.

7.3 On orchestral practice

Since the focus in this study is on knowledge and learning in a professional environment, and it is recognized that learning does not occur only in formal educational contexts (see Folkestad, 2006), educational issues within the orchestra must also be considered. A music education perspective can possibly enrich the understanding of a professional practice.

7.3.1 Lifelong learning

Learning occurs in both pre-professional education and professional practice. In previous research such as Hager and Johnsson (2009), Johnsson and Hager (2008) and Smilde (2009b) learning orchestral playing is often discussed in terms of formal education at academies, however in this study it is suggested that basic learning of the profession might occur after the position has been gained. It is also possible that the interest in orchestral playing develops after graduation.

In an orchestra different levels of knowledge, as described in this study, can be identified beyond the required entry level. In an orchestra there might be young musicians trained as soloists who have not yet acquired contextual knowledge. There might be musicians who compensate for diminishing technical skill due to injuries or age-related finger inflexibility with contextual knowledge. There might be musicians who have lost interest in improving as musicians and who work from their previously gained contextual knowledge. There might be those who are interested in improving as musicians and thus continuously develop their knowledge. There might be musicians who are devoted to orchestral playing and are extremely interested in contextual knowledge. There might be musicians who would rather have been soloists and, thus, focus their self-development on soloistic skills. These examples show that the amount of contextual knowledge, or interest in contextual knowledge, may vary within an orchestra. The orchestra cannot be seen as homogenous in regard to the contextual knowledge of its members. Different kinds of knowledge may be used by musicians in the orchestra for various reasons.

Even though musicians in an orchestra can have different ensemble skills and different contextual knowledge, they still have to create a result together and no excuses are accepted. In this study, for example, there are accounts of musicians who learn their basic ensemble skills in an orchestra after gaining their positions. The study suggests that continuous learning occurs in the orchestral context. Musicians are responsible for

their own learning in the orchestra. Thus, for orchestral musicians, not only may the major part of professional knowledge be acquired in the professional context, but it may also be constantly developed there.

The nature of the lifelong learning of orchestral musicians (Smilde, 2009a; Smilde, 2009b; Hager & Johnsson, 2009) can be dependent on the position and the individual musician's relationship to the position obtained. The size of the musical interspace for the individual musician varies within the orchestra depending on position. The amount of musical expression and contextual knowledge required varies according to the individual's position in the orchestra. There are also several layers of 'individual' in the orchestra (Hager & Johnsson, 2009) to be considered when describing orchestral playing. How knowledge is related to different positions in the orchestra, and how different layers or groups relate to each other could be researched further. This study shows that many of the problems for orchestral musicians are instrument-specific and may be dependent on one's position in the orchestra. Conducting research on various work-related problems that are instrument-specific or position-specific and on structural issues is thus important (see 1.2.1).

Orchestral institutions could acknowledge that learning takes place in the orchestra and take responsibility for the musicians' learning. This might be especially important for musicians who may lack orchestral experience at the beginnings of their careers. Maintaining interest in music-making and having opportunities to perform music at a high level throughout their careers are important work environment issues, not only the individual musician's responsibility (see 1.2.1).

7.3.2 Keeping a high performance level

The musicians interviewed in this study were from renowned orchestras (see 4.2). Musicians in these orchestras have high self-esteem as individuals and from belonging to a collective of skilled musicians. It was important to them that the standard of the orchestra was maintained regardless of the ability of the conductor, for example. They regarded the performance level of the orchestra as a collective responsibility of the orchestra, whose primary interest is the overall musical result. Still, the conductor is an essential person for an orchestra to perform at its best. A high-level orchestra requires high-level conductors. The musicians and the conductor build their performance through cooperation that is founded in mutual respect and mutual trust. In Liljeholm Johansson's (2010) study it is shown that this is not mainly about having a good overall working situation since bad behaviour from a conductor who was considered a good musician was accepted. Musicians are very task-focused.

The demands on the conductor are different for orchestras of different levels. It is necessary that the conductor is able to meet the orchestra and the musicians in the orchestra at the right level. The musicians give the conductor the authority and consequently the freedom to interpret the music (see 6.2.5). The idea that there is

mutual cooperation between all the musicians in an orchestra and with the conductor must be considered since the hierarchical system is a changeable construction. It may be fruitful to reconsider the myths associated with conductors, as recommended by Fischer and Jackson (1997).

Participants in this study considered their colleagues to be the most important audience and evaluators of professional knowledge (see 6.4.2). Standards were maintained and knowledge was expanded due to collegial assessment, or expectations of collegial assessment. The importance and role of colleagues as an audience is a topic that could be researched further.

Liljeholm Johansson (2010) reports in her thesis that orchestral musicians often work in a very demanding psycho-social working environment and she also demonstrates that much can be done to improve working conditions for orchestral musicians at an organizational level. Some of these issues can be considered from additional perspectives. Stress, for example, can motivate musicians to perform at their best but can also present problems (see 6.4). Creating an environment that enables the musicians to maintain a high standard, and to continue developing, is one of the challenges for an orchestral institution.

This study suggests that it is important for orchestral musicians to maintain their interest in performing music, and that enjoying playing music is a motivator for developing as a musician (see 6.4). Ways of keeping this musical interest include playing music outside of the orchestra, with other orchestras, chamber music, solo concertos, or teaching music. In order to gain orchestral positions musicians are evaluated as soloists, and during their education they are trained as soloists (see 7.2). Continuing to develop musical roles other than being an orchestral player was considered crucial. Perhaps portfolio careers of orchestral musicians should be acknowledged as vital for musical development.

Depending on one's position different musical qualities are exposed within the orchestra. It may be important to the overall level of the orchestra that all members keep up their musical interest by participating in various musical projects outside of the orchestra, as soloists, chamber musicians and even in other orchestras. This may be most important for players who have the least freedom within the orchestra, such as those who are not section leaders or are tutti musicians. The interviews in Smilde (2009a) and also the interviews in this study, even if they are too few to generalize from, indicate that continuous learning as an orchestra member is dependent on the position the musician has in the orchestra. All musicians who gain positions through auditions have been recognized to be good musicians. But if some of these musicians lose their interest in learning due to the position they have in the orchestra it will probably eventually affect the quality of the whole orchestra. Since it is dependent on position in the orchestra it can be regarded as both an individual problem and a structural problem. But to assess this specific issue a more extensive study on the topic should be conducted.

7.3.3 Freelance musicians

An orchestra is a construction in which collective knowledge is carried by individual musicians, and in which it should be possible to replace any individual by another musician playing the same instrument (Cottrell, 2004). However, this study suggests that this may affect the quality of a high level orchestra.

This study shows that it is important that musicians have knowledge of the particular orchestra they are playing with to maintain the level of the orchestra. They should also have knowledge of the specific musicians they are playing with. Trust between musicians is also important for the performance. Therefore the practice of depending on freelance musicians rather than filling positions in orchestras could result in a lower quality orchestra. Freelance musicians may not have the opportunity, or the time, to obtain the necessary contextual knowledge to play with the specific orchestra at a high level. It is also possible, as noted in this study, that musicians from outside do not always have access to collegial dialogue. On the other hand, freelance musicians may have social, contextual, and individual skills or knowledge to enable them to fit into many orchestras, which would require a slightly different approach to contextual knowledge. And since there are freelance musicians who work in orchestras it would be fruitful to investigate the specific knowledge of freelance musicians. This may be important for better understandings of quality in orchestral playing and of working conditions for freelance musicians.

Coda

The issue that inspired this study was musical freedom within frames. Was there musical freedom, and if there was, what aspects of knowledge made this freedom possible? I chose one of the most restricted forms of musical performance that exists in Western classical music to study this subject: orchestral playing. Building on my knowledge in the field I also chose to examine this practice among my colleagues who play the harp. By doing this I continued an educational project that harpists have been working on for over one hundred years, yet I found myself in a field that had not been visited much by researchers. So what aspects of knowledge give a musician musical freedom when playing with an orchestra?

As used in this study, the noun 'interspace' means the space between objects, and the verb 'interspace' to occupy the space in between objects. In this study interspace as a noun was used to describe and make visible in order to make it possible to find interspace as a verb. In other words, the main objective was to define the possible space in which to perform and to assess how it could be occupied through the possession of knowledge. When defining the interspace for performance, aspects of knowledge proved to include not only the knowledge of the individual musician but also that of colleagues, conductor and composer. The interspace could also be negotiated. The tools to negotiate it were knowledge and personal musical expression. By understanding the frames and sometimes by obstructing the frames the space for performance could be used and expanded. The musicians needed to have knowledge to play the language game, but they also needed knowledge to possibly change the language game. It is thus possible to negotiate the musical limitations of an orchestral performance.

Skills give freedom. A musician who has high technical and musical knowledge has greater freedom in performance than a musician who is less skilled. The ability to overcome difficulties with the instrument and in parts gives greater freedom. It is important to be able to perform what one desires.

Contextual knowledge gives freedom. A musician who knows what role he or she is playing in the moment has more freedom, as does a musician who can read the context. This knowledge is based on the enhanced listening skill that is gained through experience. To have experience of, and to know the expressive possibilities in the moment makes personal expression possible within frames. Contextual knowledge is not only knowing about the musical context in the orchestra but also knowing about

other contexts. For example, these can include knowledge about the context in which the piece was written in or contextual knowledge about other art forms.

Freedom is intrinsic in the orchestral structure. Different positions in the orchestra operate according to different notions of freedom. In addition, the scores – the knowledge or choices of the composer – convey different notions of freedom in different pieces. Freedom is given by the composer and limited by the composer's knowledge. However, musicians can sometimes negotiate the structural framework.

Trust gives freedom. The trust between musicians and conductor has to be earned. It belongs to the moment. It can be restricted due to previous experiences. Musical and social continuity can encourage this trust and affect the freedom obtained. Musicians that trust each other's ability and knowledge give each other more freedom.

Freedom is given. Freedom is given by the conductor and by other musicians. While a musician can make a claim for freedom by virtue of his or her skill, confidence, and musical personality, it still must be given by others. It is also subject to on-going negotiation and has to be renewed each time. The amount of freedom possible is also given by the composer through the score, and by the position in the orchestra.

Musical freedom is defined by the person defining it. If a musician only conceives of his or her musical freedom in terms of performing solos he or she will have less freedom than a musician who regards himself or herself as a part of the orchestra. It is also important to want to play in an orchestra. A musician may have been educated as a soloist and see being an orchestral musician as a way to earn a living, or to finance other musical activities. But an interest in orchestral playing may also be something that is developed later in one's career. Not only is the desire to be an orchestral musician is important; it is also important to want to play in the position obtained. One's colleagues and the collective performance may be an important part of defining oneself as an orchestral player.

The frames can be regarded as challenges. To be able to perform a difficult task in a difficult context is an important challenge. The challenge should be difficult but not impossible. The frames are an important part of expressing oneself as a musician, as is having the quality of one's work recognized, especially by colleagues. The collective work for a common goal may also be a challenge.

An educational aspect of professional development is the will to improve beyond the essential standards. Seeking knowledge and improving one's contextual skills as well as improving one's individual skills is important. Quality aspects of orchestral playing are contexted. For an orchestral musician, tone, volume and tuning cannot be treated as absolute solo skills but have to be evaluated in the context. The members of the orchestra also have to share the same values. However, it is possible that this kind of improvement is dependent on the position held in the orchestra.

Musical freedom is gained through increasing knowledge and with defining oneself as an orchestral musician in the moment when one is playing. What is needed in the

orchestra is a skilled solo musician with an extreme interest in teamwork. Enhanced listening skills and contextual skills, such as judgement and knowledge by familiarity, are required. It is crucial to be able to listen and to be able to react in an appropriate way. Musical freedom is not only evident in audible soloistic tasks in the orchestra that can be interpreted by the musician; it can also be evident in choices to adapt musically to the orchestral context.

There are paradoxes inherent in being an orchestral musician that have to be considered. One is the mutual and simultaneous focus on details and on the whole while playing. Another one is the balance between personal musical expression and ensemble playing. A third is musical freedom within frames.

Through their knowledge orchestral musicians can sometimes negotiate their musical freedom.

I want to end this exploration of the knowledge and learning of orchestral harpists with the words of Wittgenstein:

> People nowadays think that scientists exist to instruct them, poets, musicians, etc. to give them pleasure. The idea *that these have something to teach them* – that does not occur to them. (Wittgenstein, 1980/1984, p. 36e)

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