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Learning in Professional Orchestras

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Bachelor of Music (Honours)

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Abstract

This dissertation presents, discusses, and advances findings and contributions from an investigation into how professional orchestral musicians learn as they engage in their work together. Understanding the processes, demands, and consequences of orchestral work is important for informing the practices of professional and aspiring orchestral musicians, orchestral organisations, and educational institutions. Musicians' well-being and the longevity of their working lives are of particular concern for this community. Learning and development are identified as important factors in understanding individuals' vocational practices and how they work together. It follows that the conceptual framework of this investigation focuses on microgenetic learning and ontogenetic development to elaborate how intersubjectivity arises as musicians engage together in and learn through orchestral practices. Intersubjectivity refers here to the shared understandings of self and activity that arise from interaction with others, changing and developing with continued participation. From a sociocultural perspective, learning refers to microgenetic changes in individuals' understanding and practice, while development lies within ontogenetic changes in their knowledge and abilities. As individuals engage together in activities, their learning and developmental processes contribute to a gradually emerging intersubjectivity, that is, shared understandings of what they know, can do, and value. To address the concerns raised regarding musicians' ongoing practices, this investigation aims to describe and explain what intersubjectivity and engagement look like in orchestral performance. It also aims to comprehend how learning and development occur within this engagement.

To investigate learning and development in orchestral performance, an ethnographic inquiry was conducted to generate an account of how a small sample population of orchestral musicians engaged with and experienced their working environment. The study involved observations and interactions with 6 members of an Australian professional symphony orchestra over a 12-month period. The participants' selection targeted a range of ages, gender, instrument type, and level of seniority in the orchestra.

Within the findings, five processes of engagement were identified through which intersubjectivity was constituted. These comprise (a) awareness, (b) communication, (c) evaluation of performance, (d) acting like a professional orchestral musician, and (e) the formation of playing intentions. These processes are advanced to contribute to a metaprocess of rehearsal, that is, the personal and interpersonal process of progressively reconstituting musical performance towards a shared ideal. New descriptions and evidence of how the

musicians in this study engaged in orchestral performance are contributed, including descriptions and explanations of how trust and humour facilitated communication about performance.

Through these processes of engagement, the participants' daily interactions in orchestral performance became sites of microgenetic learning processes in three distinct ways. First, the temporal conditions of rehearsals and performances imposed a nonlinear but directional pattern on how performance knowledge changed. Second, spatial awareness was a highly important organising factor in the musicians' knowledge of performance within the orchestra. It is proposed here that the sensory ethnography term "emplacement" might be useful for describing the connections between musicians' activity, perceptions, and environments. Third, these temporal and spatial aspects of the musicians' knowledge combined as they co-created a performance environment together, within which they progressively advanced their performance practices.

Patterns and possibilities in the musicians' ontogenetic development were identified through how they presented and construed their personal histories relating to performance. They selected past instances of microgenetic learning to illuminate and explain their current abilities, attitudes, and approaches to orchestral performance. The musicians were also capable of presenting positive or negative narratives of their development, frequently corresponding with their level of satisfaction with current environments or appraisals of performance. Positive developmental narratives used experiences of injury, difficulties in gaining membership in the orchestra, and the stresses associated with surveillance and critique to explain a growing ability to cope with challenges and to perform effectively with colleagues. Conversely, negative developmental narratives explained these experiences as being injurious to their ability to meet challenges or to perform at their best. It is advanced that how musicians engage with positive and negative developmental narratives may impact on their perception of their ability to sustain their working practices into the future.

Statement of Originality

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Jamie Lachlan Kennedy

1 June 2020

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Chapter 1: Learning in Professional Orchestras

This dissertation presents, discusses, and advances findings and contributions from an investigation into how professional orchestral musicians learn as they engage in their work together. Understanding the processes, demands, and consequences of orchestral work is important for informing the practices of professional and aspiring orchestral musicians, orchestral organisations, and educational institutions. Musicians' well-being and the longevity of their working lives are of particular concern for this community (Araújo et al., 2017; Ascenso et al., 2017). Learning and development are identified as important factors in understanding individuals' vocational practices and how they work together (Billett et al., 2006; Chaiklin & Lave, 1993; Hager et al., 2012). It follows that the conceptual framework of this investigation focuses on microgenetic (i.e., moment-to-moment) learning and ontogenetic (i.e., lifespan) development to elaborate how intersubjectivity arises as musicians engage together in and learn through orchestral performance. Intersubjectivity refers here to the shared understandings of self and activity that arise from interaction with others, changing and developing with continued participation. This focus concerns both what orchestral musicians do and how learning takes place within their activity.

To investigate these issues, a sensory ethnography (Pink, 2015) was conducted, involving interviewing and observing six members of an Australian professional orchestra over a 12-month period. Five processes of rehearsal were identified that supported the participant musicians in engaging in their work together, comprising: (a) awareness, (b) communication, (c) evaluation of performance, (d) acting like a professional orchestral musician, and (e) the formation of playing intentions. Original contributions to knowledge are advanced within these findings, including new details and evidence concerning the importance of trust and humour, as well as the musicians' use of playing intentions, or effortful audiations (i.e., mental creations of sound), that are used in performance. These musicians' microgenetic or moment by moment learning processes were found to incorporate spatial and temporal elements, leading to a description of their knowledge and learning as "emplaced" (Pink, 2011). In negotiating the use of these temporal and spatial conditions of performance, it is proposed that these musicians' co-creation of their performance environment is a crucial site of learning within their orchestral practices. It was found that these musicians' perspective on their long-term career trajectories could change to reflect their immediate situational and personal concerns, and that the same musician could present positive or negative developmental narratives depending on how they chose to explain

current challenges or experiences. It is advanced here that these changing reconstitutions of the musicians' personal history may affect their ontogenetic development through influencing their perceptions of and choices concerning their own well-being and career sustainability.

Motivations for Investigating Learning in Professional Orchestral Performance

Understanding how orchestral musicians engage in and learn through their work has implications for well-being and career sustainability in an orchestral context as well as across the music industry. The quality of musicians' experiences with optimal performance, physical and mental health, and the satisfaction, purpose, or meaning they derive from their work can all be aspects of their well-being (Araújo et al., 2017; Ascenso et al., 2017; Cohen & Bodner, 2018). These aspects of well-being are connected, in part, to musicians' subjective and changing experiences of engaging in their work (Dobson, 2010a; Guptill, 2011; Kivimäki & Jokinen, 1994). Well-being is also understood to be fundamentally connected to musicians' ability to sustain working practices and careers, for example, through coping with experiences of ageing and injury (Gembris & Heye, 2014; Kenny et al., 2018; Long, 2015). Development is a factor implicated in all of these aspects of performance, whether concerning abilities, attitudes, self-concepts, or relationships. Exploring and explaining the interaction between orchestral musicians' engagement and their learning and development is the focus of this dissertation, illuminating some of these concerns and providing bases for understanding musicians' experiences across the wider music industry.

In the broadest definitions of musical engagement, including performing, composing, teaching, listening to, and moving to music, there is a gap between musicians acting and understanding the activity (Henley, 2016; Williamon, 2004). Historically, musicians have responded to this gap in different ways, such as mythologising it or attempting to bridge it through observation and philosophy (Sloboda, 1985; Woody, 2017). There is an added imperative to such explanatory attempts when it comes to the music workforce, as it concerns individuals' livelihoods and the longevity and value of elite artistic practices in society. Orchestral performance represents only a small facet of musical practices around the world; yet, it is often accorded a high value in civic life, albeit a value contested within debates concerning cultural heritage, modernity, and colonial legacies (Petocz et al., 2014; Ramnarine, 2017). In this context, understanding the processes, demands, and consequences of working in a professional orchestra finds significance in the interests and ambitions of current and aspiring orchestral musicians, educators, and orchestral institutions.

To investigate elite orchestral performance is to explore a multi-parted and complex activity in a complex physical and social environment, executed by adept musicians who have spent many years honing and practising their craft. Music performance is also a psychologically and physiologically complex activity at any level (Deutsch, 2013; Hallam et al., 2009; Parncutt & McPherson, 2002), and performing with others places this activity within the open systems of social, political, and environmental interactions (Hargreaves & North, 1997; North & Hargreaves, 2008). To further complicate matters, the different ways in which humans act and respond within their environments change through their personally unique experiences, as they form part of the continual development of what they know, can do, and value (Chaiklin & Lave, 1993; Ingold, 2011; Valsiner & Rosa, 2007a). Cultural interaction provides a site for the development of musical knowledge or practice (Merriam, 1964). Furthermore, it is also where musicians' intersubjectivities (i.e., shared understandings) are negotiated and enacted (Billett et al., 2006; Giddens, 1984). For these reasons, investigating the intersection of musicians' practices with their learning and development is valuable, as each can illuminate aspects of the other.

The intersection between learning and the practice of orchestral performance has been investigated in different ways and with different purposes. Some research of this kind is intended to examine high levels of musical performance and the means by which they are achieved, frequently presenting skills and learning from a goal- or mastery-oriented perspective (Bonneville-Roussy et al., 2011; Burt-Perkins & Mills, 2008; Corkhill, 2005; Hallam, 1995). In other instances, such research seeks to understand and to provide solutions for how musicians cope with changes in their professional experience, for example, injury, ageing, or other challenges to maintaining personal well-being and high standards of performance (Brodsky, 2011; Gembris & Heye, 2014; Manturzewska, 1990). This dissertation is aligned more with research that views musicians' knowledge and performance as existing within a constant state of change and lifelong development, responding to individuals' unique experiences and personal histories (Hager & Johnsson, 2009; Johnsson & Hager, 2008; Krampe, 2006; Oakland & Ginsborg, 2013). It also addresses industry concerns such as individuals' well-being and ability to sustain effective musical practices throughout and across musicians' working lives.

Investigating learning in professional orchestras is crucial for understanding the processes, demands, and consequences of engaging in orchestral work, as well as for informing musicians' abilities to cope with the demands of their work throughout their career (Teague & Smith, 2015). The findings of this study confirm the importance of those concerns

that musicians' hold for the impact of their well-being on performance. The goodwill trust (Khodyakov, 2007) that the musicians in this study developed as they worked together impacted on their emotional stability, the motivation behind the effort with which they engaged in their work, and their ability to take risks and feel that they were performing effectively with their colleagues. Further to well-being, and connected to it, musicians' ability to sustain their working practices is another key concern within the industry. The musicians in this study frequently constructed and presented developmental narratives about their ability to cope with the challenges of orchestral working life, such as injury, stress, anxiety, intense scrutiny, and the difficulties of establishing themselves within the community that comprises the professional orchestra. Whether such narratives are positive or negative in outlook is likely to influence musicians' choices about continued participation in the workforce or likelihood of seeking appropriate clinical intervention for their mental or physical health (D. Bennett, 2008; Dobson, 2010a). The motivation for this investigation, then, derives from both musicians' inquisitiveness about their own practices as much as the desire to address the aspects of their working practice that impact their ability to perform and sustain healthy and long-lasting careers.

This investigation is concerned with the working practices of permanent instrumental members of the professional orchestral workforce. Soloists and conductors have not been included in this investigation as their employment and association with orchestral institutions tends to be on a more itinerant basis. In the case of most longer-term contracts, conductors are likely to spend only part of the working year with one orchestra, thus, their membership in an orchestra is often considered to be of a qualitatively different kind (Faulkner, 1973b). Audiences also do not feature in this investigation as they arose only as a mostly abstract and anonymous entity in discussion with the participants. This may be related to attitudes, common in the classical music industry, that the most important audience in performance is often felt to be fellow performers (Murnighan & Conlon, 1991).

As well as being of value to the specific concerns of professional orchestra musicians, this dissertation also elaborates findings about the relationships between interaction, learning, and work that are important to vocational practices in general. Conceptualising learning and development as changes in what musicians know, can do, and value highlights how those processes can arise intersubjectively from coparticipation (i.e., the interactive processes of agency and affordance: Billett, 2002a) in the orchestra's practices. Intersubjectivity, in this context, refers to the individuals' shared understandings of a practice and how to engage in it together, developed through the gradual adaptations that they make as they negotiate their

collaborative effort (Billett, 2006; Valsiner, 2000). In this investigation, the musicians were found to co-create their performance environment through their coparticipation. That is, they elected to engage with the physical and social environments they encountered to continue refining their individual and collective practice throughout each rehearsal or performance. This conceptualisation is valuable for understanding the role that microgenetic learning (i.e., moment-to-moment changes in understanding and practice) plays in the gradual refinements that occur as individuals negotiate practices together, as well as the use of the spaces in which they work (Scribner, 1985). On occasion, the use of the term “collaborative” in this context may appear to imply outcomes that are uniformly positive, not unlike when employing the metaphor of an orchestra to suggest “harmonious” collective action. However, the descriptions of observed instances of collaboration within the orchestra illustrate a reality that admits instances of confusion, disagreement, and the necessity to generate high-level performances from imperfect situations or changing knowledge. Such descriptions indicate that collaborative efforts often require support to maintain effective engagement or sustainable practices.

To address these concerns in the classical music industry as well as issues of understanding how practice and learning co-occur in professional orchestral performance, this dissertation presents an account of how a sample of professional orchestral musicians engage in and learn through their work. It describes and explains their physical, psychological, and sociocultural interactions. Observations and discussions are presented regarding what engagement and intersubjectivity look like in orchestral performance and how learning and development occur within it. This first chapter briefly sets out the structure of this thesis, describing the primary concerns of the literature on orchestral performance and outlining the conceptual framework and the methodological approach of this investigation. It also gives a brief summary of the findings and implications of the investigation, as well as the original contributions to knowledge advanced within this dissertation.

Self, Activity, and Learning in Orchestral Performance

As with many others who work in the creative industries, professional orchestral musicians develop intimate connections between their activities and their sense of self throughout their careers. Even the meanings of the terms “professional”, “musician”, and “career” are contested within musical communities and become important signifiers for how musicians understand themselves and engage with others (D. Bennett, 2008; Cottrell, 2004; Coulson, 2010; Pitts, 2005). Orchestral musicians may experience particular difficulties when

identities constructed around notions of artistic authority and autonomy clash with their experiences of musical and social hierarchies, injury, or discussions of economic worth (Allmendinger & Hackman, 1996; Faulkner, 1973b; Guptill, 2011; Murnighan & Conlon, 1991; Reid et al., 2016; Westby, 1960). Recognising that musicians continually reconstitute their identities and knowledge across their lifespans, ongoing learning processes are viewed as increasingly important in understanding the relationship between their activities and sense of self (D. Bennett & Hennekam, 2018; Johnsson & Hager, 2008; Reid et al., 2019). These perspectives emphasise ongoing adaptation of practice and knowledge within sociocultural contexts, rather than goal-oriented explanations of mastery. The concepts utilised in this literature, such as “graduateness” or “becoming”, emphasise the continual development of both musicians’ sense of self and how they engage in their working activities.

Between individuals working together, and between activity and understandings of self, lie cultural systems of practices and knowledge (Somerville, 2005). Culture has been conceptualised in a number of different ways: the “whole way of life” of a social group (Grossberg et al., 1992; Hall, 1997), the things people do, know, make, and use (Spradley, 1980), or communities, their ideas, and their values existing in “overlapping performative flows” rather than a set of stable objects or practices (Barker, 2002). Whichever way culture is defined, it is a means of connecting the personal with the interpersonal within particular physical and social environments. As meanings arise out of and are modified by individuals’ actions and social interactions (Blumer, 1969), learning can be described as individuals’ gradual and infinite process of interacting with and enacting an “external” culture (Merriam, 1964). In musical communities, the performative knowledges surrounding musical practices are negotiated in much the same way as are their attitudes, membership, hierarchies, languages, and behavioural conventions (Brinner, 1995; Cottrell, 2004; Kingsbury, 1988). This implies a specificity to cultural knowledge and practices dependent on the individuals, their unique experiences, and the particular environments and activities through which they act and know. Understanding learning in orchestral performance, then, requires an investigation of the specific orchestral culture in which the musicians engage together.

Intersubjectivity, Learning, and Development

The defining feature of ensemble performance, such as in an orchestra, is the integration of individual and social actions into a shared activity, in which each performer’s contributions and presence influence the whole performance (Badino et al., 2014; Davidson & Good, 2002; Gaunt & Dobson, 2014; King & Gritten, 2017; Murnighan & Conlon, 1991;

Young & Colman, 1979). Not only are individual musicians' doing, thinking, and learning closely intertwined, but their coparticipation in ensemble performance allows them to collectively negotiate and develop their practices and knowledge towards an agreed way of playing. Thus, it is through coparticipation in concrete experiences of cultural practices that intersubjectivity arises amongst musicians (Van de Veer, 1994). Intersubjectivity is regarded here as individuals' shared understandings of self and activity that develop as they act together (Valsiner & Van de Veer, 2000). Subsequently, coparticipation is also a crucial site of learning and development in orchestral performance (Billett, 2002b; Rogoff, 1990).

Consistent with sociocultural explanations of intersubjectivity and engagement, a distinction is made between learning and development (Billett, 2015; Rogoff, 2003; Valsiner & Van de Veer, 2000; Wertsch, 1985). Learning is conceptualised as the short-term changes (i.e., small and incremental changes occurring in short space of time) in understanding or practice that arise out of moment-to-moment experiences, also referred to as microgenesis. Learning is held to be part of the meaning-making processes of consciousness and, subsequently, as a continual product of being in and engaging with the world. Development refers to ontogenesis, or the long-term changes in knowledges and abilities that take place over the lifespan of an individual. A reciprocal relationship is held to exist between microgenesis and ontogenesis: Instances of learning contribute to the gradual development of abilities, attitudes, or values, and developmental processes guide individuals' interactions in daily life. Using this conceptual framework, the investigation comprising the practical inquiry informing the findings, deductions, and contributions of this dissertation seeks to describe and explain the learning and development of a sample of professional orchestral musicians. To access and comprehend these processes, the inquiry is focused on how intersubjectivity arises as those musicians engage in their work together. The research question aimed at providing explanations of these points is framed thus: How does intersubjectivity arise as professional orchestral musicians engage together in and learn through their work? This question aims to focus the investigation on what orchestral musicians do and how learning takes place within this activity. The aim of carrying out this research is to further understand the processes, demands, and outcomes of orchestral performance, such as orchestral musicians' well-being and career sustainability.

Methodological Approach

As musicians' knowledges and practices arise from their engagement with concrete instances of sociocultural interaction, their learning and development are held to be situated

and embodied amongst these particular interactions and environments (Chaiklin & Lave, 1993; Contu & Willmott, 2003; Fuller et al., 2005; Lave, 2008; Lave & Wenger, 1991; Merleau-Ponty, 2013; Somerville, 2006). Thus, the procedural knowledges of orchestral performance are not materially distinct, transferrable artefacts, but are understood to be tied to the particular persons and situations through which they are enacted. To address this epistemology, a sensory ethnographic approach was employed to conduct an empirical and inductive exploration of how the participant musicians engaged together within their orchestral environment (Atkinson, 1990; Atkinson et al., 2001; Denzin, 1997; Fetterman, 1989; Geertz, 1973; Pink, 2015; Willis, 2007). Sensory ethnography is a methodological approach that utilises observation and interaction to generate a faithful account of the cultural knowledges, practices, and values by engaging as fully as possible with the participants' multifaceted sensory environment (Hurdley & Dicks, 2011; Mason & Davies, 2009). Through focusing interaction on sensory topics and utilising the researcher's own sensory experiences and interactions, it aims to produce accounts "as loyal as possible to the contexts, negotiations and intersubjectivities through which the knowledge was created" (Pink, 2009, p. 8).

The investigative procedures implemented comprised participant observations and interviews with six members of an Australian symphony orchestra over a 12-month period. The participants were selected to include variation in age, gender, instrument type, and level of seniority in the orchestra. The interviews focused on both personal histories and immediate recall of sensory engagement, and involved a combination of speaking, drawing, playing instruments, and physical demonstration in the rehearsal space. The resulting observational field notes, interview recordings, and transcripts were analysed for the sociocultural themes and processes contributing to the participants' performance knowledge and learning. To ensure methodological rigour in this qualitative paradigm, shared understandings about performance were discussed and checked with participants and findings were generated and supported using participants' own words, supported by meanings derived from their context (Corbin & Strauss, 2008; Whittemore et al., 2001). Ethical considerations included addressing and negotiating consent throughout the research process, demonstrating sensitivity towards stressful personal or professional issues, and de-identifying participants within published findings, all with the intention of fair dealing towards the participant individuals and organisations. Through the process of writing up ethnographic accounts, the findings were presented about what orchestral musicians do as they engage in their work together and how learning and development occur within this collective activity.

Researcher position.

As the researcher, my own position and musical experience is important to state as it influences the motivation for the study. It is also a primary basis for my interaction with and interpretation of the people and ideas encountered while carrying out this investigation. I have been a freelance orchestral trombone player in the Australian classical music scene in the fifteen years prior to the publication of this dissertation. I have played regularly with professional symphony and chamber orchestras in Australia during this time, not as a permanent member, but in casual and contract positions, as well as performing with other stage and chamber ensembles. I am also a brass teacher and ensemble conductor in Australian primary and high schools and have a particular interest in the learning processes that occur through and within performance across musicians' lifespans. Having worked with them frequently and for some time, I was personally known to the majority of members in the orchestra that took part in this investigation. Thus, as an orchestral industry "insider", in a qualified sense, I was able to use this position to establish relationships with the participants directed to the purposes of the investigation. I also used my own specialised knowledge as an orchestral performer to make expert and informed interpretations and judgments concerning the encountered sensory environments, social structures, and cultural knowledge of the orchestra and its members. As an informed insider in professional orchestral performance, this approach allowed me to make use of my own historical and immediate sensory experiences within the encountered situations to generate an empathetic and reflexive ethnographic account that informs the findings presented in this dissertation.

Findings

The first part of the findings, advanced in Chapter 5, elaborates engagement and intersubjectivity, specifically, what those concepts look like in the context of professional orchestral performance. Five processes of engagement were identified that supported the participant musicians in performing together, comprising (a) awareness, (b) communication, (c) evaluation of performance, (d) acting like a professional orchestral musician, and (e) the formation of playing intentions. In the first and second categories, the processes of awareness and communication were fundamental to the musicians' ability to be conscious of and to interact with the people, actions, sounds, and other aspects of their environment. Thirdly, evaluation of performance, or continually appraising and forming judgements about playing or other kinds of activity, was another process of engagement. The development of goodwill trust amongst colleagues (Khodyakov, 2007) was identified as a highly important factor in

how they communicated about those evaluations, as it affected their emotional experiences and their abilities to take risks and perform effectively with each other. Further to this, humour, when used in appropriate ways, was found to be an important way of managing trust amongst colleagues, particularly when discussing evaluations of their own or others' performance. Fourthly, acting like a professional orchestral musician was identified as a kind of engagement, as playing was not the only kind of activity that was subject to being evaluated and negotiated amongst the participants: For example, other intersubjectively shared and contested practices included ways of speaking and dressing or attitudes towards compartment and employment conditions. Finally, the formation of playing intentions was identified as the process of engaging in effortful audiations (i.e., mental creations of sound) that the musicians used in the enactment of immediate or future performance. As the basis for engagement and intersubjectivity in the musicians' practices, it is advanced here that these five processes contribute to a metaprocess of rehearsal. By articulating how professional orchestral musicians engage in what they would recognise as the colloquial term of "rehearsal", a technical description for this term is proposed: the personal and interpersonal process of progressively constituting and reconstituting musical performance.

The second part of the findings, presented in Chapter 6, advances insights concerning how learning and development occur as musicians engage in orchestral work. Microgenetic learning processes, or short-term patterns of change in the musicians' understanding and practice, had particular temporal dimensions shaped by the ways in which rehearsals and performances occurred. These learning processes that occurred had a nonlinear, but nonetheless directional, pattern. This is seen, for example, in how a single passage of music was refined and reconstituted over multiple occasions, spread out in time through a week-long rehearsal schedule. The learning processes also had unique spatial characteristics, in that awareness of both the relative spatial arrangements of the musicians in the orchestra and the sounds they produced were important influences on how the musicians engaged in performance. The individual musicians reported creating unique and evolving "places" within the orchestra. These places were tied to their current situations, social and cultural knowledge of their colleagues, and the music they were performing at the time. The findings emphasised the importance of space and place in how the musicians engaged in performance, warranting a description of this performance knowledge as being "emplaced" rather than embodied (Fors et al., 2013; Pink, 2011). Taken together, these aspects of learning occurred as the musicians co-created their performance environment as they worked together. That is, through their shared activity in rehearsals and performances, they continued to negotiate amongst

themselves the use of space and rehearsal time to create the environment for their performance.

How these musicians reported their ontogenetic development was often related to their current situation. Moments of microgenetic learning were isolated and used to explain their experience of their current situation and career trajectory. The musicians presented these explanations within developmental narratives, which could portray a positive or negative assessment of their trajectory or ability to cope with the immediate challenges they were facing at the time. For example, when surrounded by a working situation in which they believed they could perform effectively, the participants often presented narratives in which challenging experiences in the past contributed to an increasing ability to cope with their current challenges. In other situations in which they perceived there were problems beyond their control or ability, they often portrayed those past experiences as injurious to their current ability to cope with their situation. Each kind of narrative revealed different kinds of developmental processes in dealing with some common issues, namely, stress, injury, anxiety, coping with surveillance and critique by colleagues, and the difficulties of establishing membership in a particular orchestral community. It is suggested here that the musicians' positive and negative experiences of their past and present situations may affect their ontogenetic development through influencing their choices and perspectives on their continued ability to perform into the future.

Implications of Findings

The key implications of these findings, reported and discussed in Chapter 7, are related to the two major concerns of musicians' well-being and the sustainability of their working practices. The development of goodwill trust amongst colleagues is important in this regard, as it was found to be able to impact their emotional well-being positively in the case of high levels of trust, and negatively in situations where trust levels were low. Examples of this impact were frequently connected to trial periods of employment, in which new members of the orchestra are subject to the surveillance and critique of colleagues with whom they work closely and socialise. Trust was also an important consideration in how the musicians communicated with each other, particularly regarding evaluations of their own and others' performance. Levels of trust had profound impacts on the participant musicians' abilities to take artistic risks and to communicate effectively with members of their instrumental section, even, in some cases, to the point of feeling unable to perform their roles adequately. Thus, considerations for how to assist orchestral musicians who are experiencing stress or anxiety

need to take the role of trust amongst colleagues into account, including the difficulties that arise from recruitment processes and mostly permanent hierarchical relationships.

Connected to these impacts on well-being, the musicians' developmental narratives have implications for their ongoing working practices. Musicians' perceptions of decline in their ability to perform effectively, whether through injury, anxiety, or reduced trust with colleagues, may result in an experience of reduced trust in their ability to perform. Furthermore, these perceptions of declining ability or frustrations with factors beyond their control, such as repertoire or working conditions, may influence their decisions about continued participation in the orchestral workforce. Finally, and with more severe implications for their physical and mental well-being, negative perceptions of development may affect their attitudes towards their own health, having the potential to result in maladaptive coping behaviours (Dobson, 2010a) or social isolation and a reduced likelihood of seeking clinical help (Kenny & Ackermann, 2013; Rickert et al., 2014a). Musicians' perceptions of their development over their careers and how this relates to their current experiences of work, then, may have important potential repercussions for longevity of their working practices. As these deductions are based on a single study in an emergent area of research, further investigation into the connections between developmental narratives and sustainable working practices is recommended.

Contributions to Knowledge

The original contributions to knowledge advanced in Chapter 7 include findings related to engagement, learning, and development in orchestral working practices and culture, as well as methodological developments. Among the data collection techniques employed in the ethnography, a style of situated immediate recall interview was developed in which the participants were interviewed immediately following a rehearsal and when sitting in their own chair within the orchestra. This format was developed to observe and discuss the musicians' interactions with the affordances in their environment and is advanced as a suitable technique for allowing researchers to enter further into the sensory environments of performers.

Three contributions to the understanding of orchestral musicians' engagement include new descriptions and explanations of trust and humour within orchestral culture and a new conceptualisation of how musicians create and recreate playing intentions. Firstly, while trust has been identified as an important issue in orchestral performance (Gaunt & Dobson, 2014; Khodyakov, 2007), this dissertation presents new evidence that confirms and elaborates the

complex relationships among trust, hierarchy, performance, and well-being. Secondly, musicians have been known to make use of humour as a “social lubricant” and as a process of intersubjectively sharing values and beliefs (Cottrell, 2004, p. 133), and new explanations of how humour is used to facilitate trust and communication about performance are presented here. Thirdly, the concept of playing intentions elaborated in this thesis brings together the processes of audiation (Brodsky et al., 2008; Gordon, 2009) and anticipatory auditory imagery (Brodsky et al., 2003; Keller & Appel, 2010; Keller et al., 2010) and illustrates how they form part of musicians’ intentionalities and practices.

Three contributions to the understanding of orchestral musicians’ learning and development include explanations of the emplacement of performance knowledge, how musicians co-create performance environments, and their use of positive and negative developmental narratives. Firstly, because of the observed importance of space and place to the performance of orchestral practices, emplacement (Pink, 2011) is advanced here as a useful concept to explain how orchestral performance knowledge is constituted and reconstituted around the musicians’ changing understandings and uses of space. Secondly, the ways in which musicians collectively negotiate and manipulate both the spatial and temporal aspects of changing performance knowledge are presented here and described as a co-creation of their performance environment. Finally, the descriptions of developmental narratives and their connections to musicians’ current working experiences and future work practices are advanced as a significant contribution to knowledge about the orchestral workforce.

Dissertation Overview

In overview, this dissertation is comprised of a series of chapters that present the investigation into learning in professional orchestras. In Chapter 2, a review of the literature related to orchestral performance is discussed to provide the explanatory bases for the conceptual and procedural aspects of this inquiry. Chapter 3 presents the conceptual framework for investigating learning and development in orchestral performance. The methodology and procedures employed for this investigation are described and justified in Chapter 4. The findings, deductions, and discussions are presented in Chapters 5 and 6, and the key findings, contributions, and considerations of practice are advanced in Chapter 7. The following chapter (Chapter 2) after this introductory one discusses the literature related to orchestral performance and learning. It identifies key concerns within the classical music industry and commences building the case set out above.

Chapter 2: Working in Professional Symphony Orchestras

This inquiry is motivated by the need to understand the processes, demands, and consequences of working in a professional orchestra, and this chapter addresses three major issues raised by the literature of music performance. Firstly, there is an important relationship between musicians' sense of self and their knowledges, attitudes, and actions surrounding performance. This materially affects the quality of musical practice. Secondly, the role of music performance culture as it mediates musicians' activity and learning needs to be better understood in the orchestral context. Thirdly, it is important to understand the connection and integration of personal and social aspects of engaging in and learning through orchestral work. Overall, this chapter proposes that, given musicians' personal and social concerns with well-being and sustainability in professional orchestral performance, it is important to understand their learning and development as they engage in their work. This chapter describes the problem, exposed by these issues, of professional orchestral musicians' complex and problematic experience of learning as a part of their orchestral practice, before conceptualising this learning in the following chapter.

The primary problem identified is that learning is a complex and integral part of engaging in orchestral performance, but there are aspects of orchestral working situations that can inhibit this learning, creating difficulties for musicians and orchestras. Learning and development are important to musicians' abilities to engage in orchestral work, both in day-to-day activities and in their long-term contributions to organisations. This learning takes place in individually and socially complex ways as a part of the interactions that contribute to orchestral performance. However, there can be social and musical circumstances that impede this kind of learning. These impediments can occur through social expectations that require learning to be covert and unacknowledged, or they can take the form of the physical and psychological stressors and difficulties of the profession. Thus, learning is difficult to capture and understand in the orchestral context because of its complex individual and social circumstances; yet it is important to examine and address those difficulties because learning is crucial to maintaining elite performance in ways that are sustainable for musicians and orchestras.

This chapter investigates these issues of learning and development in orchestral practice by examining research on orchestral musicians' working lives, the associated social, cultural, and psychological aspects of their work, and how learning and development are understood in this context. The literature on orchestral performance and the wider classical

music industry is explored to establish the importance for musicians, orchestras, and educators of understanding what professional orchestral musicians do. The social aspects of orchestral performance are considered, connecting the contesting and negotiating of orchestral practices with individual musicians and orchestral organisations' concerns for the sustainability of their activities. Individual musicians' unique and interrelated understandings of their work activities and their sense of self are discussed through the findings of cultural research in orchestras. Examination of the psychological literature highlights the interrelationship of personal, social, and musical processes and the importance of well-being to musicians ongoing ability to participate in and develop a valuable contribution to orchestral performance. Finally, current understandings of learning and development in the context of orchestral performance are discussed and a focus on orchestral practices is suggested to bring the complex personal and sociocultural aspects of learning together. Learning and developmental processes are identified throughout as key aspects in understanding music performance and understanding how they occur in orchestral practice is proposed as the chief problem to be addressed in this dissertation.

Working Lives of Musicians

The need for understanding contemporary working life in the professional music industry is increasingly relevant as questions are raised about musicians' abilities to cope with the demands of their work throughout their career (Teague & Smith, 2015). Part of this concern lies in the outcomes, effectiveness and limitations of workplace practices in the classical music industry (D. Bennett, 2008, 2016; Bridgstock, 2005). The rise of interest in sociocultural understandings of the music profession presents some issues that motivate this research. For example, the problematisation of the terms "musician" and "career" relates to current changes in economic and social practices in the music industry, and these words and concepts are crucial to how orchestral musicians understand themselves and their activities (Cottrell, 2004). Particularly in the case of professional musicians' well-being and the sustainability of performance activity, learning and development are key aspects of performance that warrant investigation and debate (Rink et al., 2017). Although research that focuses on orchestras is limited compared to that concerned with other kinds of occupational performance, there is a growing concern to make explicit the tacit knowledges and practices of musicians (Williamon, 2004). The high value placed on this career by a large number of people in music education and the music industry makes thorough investigations and

explanations of orchestral practices and their associated learning processes an important research aim.

Orchestras occupy particular economic, historical, and sociocultural positions within society and, subsequently, there is great diversity in how orchestras exist internationally (Ramnarine, 2017). Professional symphony orchestras in Australia, the social context and source of this research, possess some differences to other orchestral cultures around the world (Radbourne, 2007). With some variations and exceptions, Australian professional symphony orchestras permanently employ approximately 70-100 musicians to play in a variety of performance activities including stage concerts, recordings, chamber music, opera, and ballet. Musician members are recruited primarily from the domestic national population, and undergo an appointment process of application, audition, and trial period for specific orchestral positions. Auditions are frequently blind, and chosen musicians undergo trial periods that may last from 3 to 12 months working with the orchestra. Appointments can be made by a panel of the orchestra's musicians and musical director, and successful appointments most often grant musicians full-time, permanent employment in that position with the orchestra. Some of these performance activities and employment conditions are similar to those of orchestras in Europe and North America, and many Australian musicians travel abroad to gain experience and pursue work in those orchestral cultures. Australian orchestras also experience financial and governance difficulties similar to those experienced in symphony orchestras in other countries (Strong, 2005). Thus, whilst regional differences in orchestral practices should be considered, there are many similarities in how musicians engage in this kind of professional orchestral work around the world.

Looking at the wider industry in which orchestras operate, it is seen that careers in the classical music scene are frequently misunderstood and misrepresented (D. Bennett, 2007; Bridgstock, 2005; Creech et al., 2008; Latukefu & Ginsborg, 2018; Petocz et al., 2014). Contrary to the idea of musicians "playing for a living", detailed and long-running investigations have found that most musicians in the classical music performance sector engage in multiple kinds of work simultaneously. This can include teaching, composing, event managing, and writing, in addition to many different kinds of performance, not all of which are paid. It is also common for workers in this industry to have non-music related employment, for example in retail or hospitality, to provide a stable income that supports their musical activities. The makeup of these musicians' activities frequently changes due to the contingencies and situations in which they find themselves, and this work is now characterised with terms such as portfolio or protean careers.

Even though performance careers assembled from these fragmentary activities and incomes are often contrasted with the stable conditions of orchestral employment, the complexity of orchestral work is similarly open to misrepresentation. Even the stability of employment in orchestral positions, supposedly one of their defining characteristics, is questionable, as individual health concerns, low wages, or financial instability in the organisations can render those jobs insecure (Long, 2015). Orchestral organisations are under considerable pressure to justify their activities, particularly in terms of economic function and public access, and musicians are often required to engage in non-performance-related activities (Herman, 2018; Ramnarine, 2011). Subsequently, orchestras are increasingly compelled to respond to short- and long-term audience market situations, turning public engagement, marketing, and educational outreach into economic realities for the organisations' survival. D. Bennett (2008) has argued that many orchestras' organisational structures have been inadequate for coping with the responsibility of attending to these priorities. Furthermore, she found that individual musicians' involvement and contributions outside the orchestra in volunteer, education, and community music were frequently not recognised as part of the organisations' output (2008, p. 29). In one way, this speaks to the organisations' potential ineffectiveness in assessing their own working practices, particularly in capturing the extent to which their members engage with the arts and general community: For example, orchestral musicians have reported being able to find creative and professional fulfilment through combining their performance with education (Abeles & Hafeli, 2014). In another way, it suggests that there is a common failure within the classical music industry to understand that orchestras are connected to the wider community. Simply put, orchestral musicians engage in work that is more socially and culturally complex than is often admitted by a narrow description of their work as "playing". It is important, then, to acknowledge how musicians operate around and outside of the institutional boundaries of the orchestra to understand how they engage within it.

For the purpose of this dissertation, these changing understandings of work in the classical music performance industry and in orchestral practice highlight the problematic aspects of learning within participation in this context. It can be seen here that understandings and expectations of what orchestral musicians do are contested and shifting as orchestras cope with unstable circumstances in financing and governance. Accordingly, it is not only orchestral musicians' understandings of who they are and what they do that is experiencing this state of change, but their actual practices of performance and engagement with the wider public will experience pressure to change as well. The learning and developmental processes

that orchestral musicians experience in these instances are not necessarily undertaken willingly or even consciously, as they are brought about by the circumstances in which these musicians find themselves. It is pertinent to this research to consider whether those experiences and the development associated with them are considered to be positive by the musicians, or if there are situations in which the changes in their understanding and practice might be injurious to their ability to participate effectively. Just as the actual circumstances and understandings of orchestral practice are plural and in flux, learning and development in this context are also not firmly understood.

The misunderstanding of professional orchestral performance can create problems in terms of how individuals and institutions engage with orchestras. When government bodies and academics categorise music workers into traditional, census-style single occupations using job descriptions that are too definitive or limiting, they fail to capture the complexity of music work and of how music workers understand themselves (Petocz et al., 2014). The result of this misrepresentation is that inappropriate emphasis is often placed on musicians engaged in more traditional employment situations, for example, in orchestras. As individuals engaging with the classical music industry, music students' conceptions of orchestral careers are known to be frequently misaligned with the realities experienced within the industry (D. Bennett & Bridgstock, 2014; Johnsson & Hager, 2008). Performance students commonly place importance on technical performance skills and individual artistic responsibility and assign a lower level of importance to "non-performance" activities such as training in pedagogy (D. Bennett & Freer, 2012; Kingsbury, 1988). This restricted view can also include underestimating concerns about coping with physical, psychological, or interpersonal issues (Steptoe, 1989). Bennett (2008) argues that these individual and institutional understandings of music performance put pressure on conservatoires to devote their resources and curriculum space to performance-centred activities at the expense of training in pedagogy and other areas of engagement with the music industry, distorting effective resource distribution (Petocz et al., 2014). Such an emphasis also creates significant problems for tertiary institutions that need to consider (and demonstrate) what constitutes appropriate and effective training for orchestral musicians, among many other kinds of performance.

Understanding the concept of work as a professional orchestral musician is important to conservatoires, orchestral performance students, and orchestral musicians. However, scholars in sociology, cultural studies, ethnomusicology, and psychology have challenged an unproblematised conception of these terms in their popular meaning in industry and lay usage (Cottrell, 2004; Coulson, 2010; Lamont, 2011). Although the language and methodologies

these scholars use reflect their respective discourses, their arguments generally agree that the near-exclusive association between “musician” and “performer” (and often “instrumental performer”) is to be questioned. From a psychological perspective, Lamont (2011) points out that the cognitive skills and acquired knowledge exercised in listening to music can be extensive and highly intricate, regardless of the listeners’ abilities to perform the music in question. Social and ethnographic scholars in Western music argue that use of the word “musician” frequently excludes singers, composers, musicologists, and music teachers (D. Bennett, 2008; Cottrell, 2004). It is clear from their research that the term can be used to assert professional and social boundaries and in doing so can make implicit statements about what counts as music and musical activity. Such behaviour establishes a value system that privileges the obvious physical aspects of instrumental performance whilst devaluing other kinds of engagement with music, such as teaching and organising musical events, which are activities in which many orchestral musicians take part.

“Professional” is another term that has substantial meaning within the industry but is similarly problematic for the sanitised assumptions it can contain about performance work (Cottrell, 2003, 2004; Pitts, 2005). “Paid to play” is a phrase commonly used by instrumental musicians to situate themselves as professional, and to describe a kind of employment of which they approve in this context. This often sits in opposition to playing without being paid or being paid for a “non-performance” type of activity. The concept of “playing” used in this manner is curiously de-contextualising, admitting neither the bodily and mental realities of injury and stress nor the messy interpersonal processes that are integral to enabling performance to take place. A more contextualised understanding of professional music performance is required to counter the apparent limitations created by these practices and languages within music performance work. This understanding of professional musical engagement needs to take account of the complex social and personal elements of performance work.

Social and psychological research into orchestral workplaces has published extensive lists of the problems faced by orchestral musicians. The problems can range from internally generated stress (Piperek, 1981b) to geopolitical conflicts (Allmendinger & Hackman, 1996) to physical injury (Kenny & Ackermann, 2013). Two issues in particular stand out for the number of voices identifying them as important in orchestral work. Firstly, cultural and social policies in regard to orchestras are closely tied to economic policy, generating discussions about economic and artistic worth that are distinctly uncomfortable for many musicians (Allmendinger et al., 1996; Arian, 1974; D. Bennett, 2008; Faulkner, 1973a). Musicians have

been resistant to calls for the implementation of structured performance reviews as part of their employment (Watson & Forrest, 2014), and this may perhaps reflect fears about managerial attempts to quantify or externally assess artistic performance and merit. It is possible that they also have concerns about the impact such a practice could have on performance anxiety, although the reasons for this resistance have not been investigated or addressed. Secondly, in the consciousness of many orchestral musicians, there is a conflict between individuality and conformity to the group that is characteristic of highly trained artists working in a single large ensemble (Brodsky, 2006; Davidson & Good, 2002; Gaunt & Dobson, 2014). The assertion of an inevitable conflict between the individual and society in musical activities is contestable due to possible Western ethnocentric assumptions about such concepts (Blacking, 1973). However, the sheer amount of evidence presented in the orchestral literature suggests that this kind of conflict is a very real experience for many musicians. It is a problem manifested in their everyday life, such as when they feel obliged to subvert their own musical intentions for those of a principal player or conductor (Cottrell, 2004). The conflict also becomes a problem at a conceptual level, for example, when considering the competing claims of importance for solo and ensemble performance within a tertiary music curriculum (Kingsbury, 1988). It appears important, then, to take account of this conflict between the needs, intentionalities, and activities of both individual musicians and orchestras, and the problems that arise from it.

The identification of problems faced by orchestras and their musicians is nothing new, but each issue carries implications for how musicians' learning and development take place. Looking back to one of the earliest pieces of research into professional orchestras, the principal economic, artistic, psychological, and social difficulties are laid out succinctly in the very first paragraph (Westby, 1960, p. 223). This passage is striking for its relevance to the problems still faced by orchestras several decades later, as outlined in the literature since then (Long, 2015). It is evident, however, from comparing that early appraisal with more recent publications that scholars today no longer find it satisfactory to merely report problems but find it their responsibility to provide solutions or, at the very least, positive possibilities for the future. Given the contemporary literature's constant recommendations for practitioners, students, and teachers of orchestral performance to be better informed about the problems they face, there is still work to be done in researching and communicating about these problems. Considering the difficulties involved with understanding what orchestral work is and finding ways to cope with its problems, it is clear that orchestral practitioners,

classical music students, and educators are finding it difficult to predict what kind of learning and development is appropriate in changing circumstances.

In considering orchestral musicians' working lives, it is clear that there are several parties concerned about how musicians maintain orchestral practices and how they can cope with problems experienced in their work. Performers, artistic organisations, students, and educational institutions find it important to question what they know about practices within orchestras as well as within the wider music industry, as there are known to be widespread misconceptions about those practices. Just as understandings of musicians' engagement are changing, so are understandings of learning and development in this context, and this is of particular concern to educational institutions. An oversimplification of orchestral practices into "playing" is limiting to this understanding, and so its broader social and psychological context of orchestral musicians' participation needs to be investigated. It is known that conflict exists amongst the social, personal, cultural, political, and financial motivations and circumstances in orchestral performance, and finding a way of coping with these issues is important to orchestral musicians' ongoing practices. The following sections of this chapter outline the social, cultural, and psychological issues faced by orchestral musicians and underscore the connection between their performance practices and the complexities of their learning and development.

Social Aspects of Orchestral Performance

Social aspects of orchestral performance have been a consistent focus in the study of orchestras from the earliest research on the topic and continue to be used to explore and explain orchestral performance. The sheer range of social dimensions discussed in this literature indicates that the social nature of performing in ensembles (as opposed to the individual pursuit of solo playing) makes ensemble performance distinctly interesting to many researchers. Social worlds, relationships, and the activities of entire orchestral organisations and sub-groups have provided rich material for exploration. These investigations have resulted in various descriptions of the complex tasks, demands, and problems associated with performing in orchestras. Looking well beyond the assumptions that conflate onstage musical harmony with offstage cooperation, social research has pointed to the difficulties of engaging in shared artistic activities that are sustainable for individuals and organisations (Ramnarine, 2011). One of the key issues arising from this literature is how musicians negotiate and enact artistic values both within the orchestral community and with

those around and outside it, and how this negotiation and enactment can be sustainable within their changing and developing practices.

The earliest academic research in orchestras was concerned with how they function as social institutions, and how this affects musicians' social interactions. Faulkner (1973a, 1973b), Schulz (1981), and Westby (1960) all describe detailed social worlds arising from interviews with orchestral musicians about their attitudes towards aspects of their work, and all of them concentrate almost exclusively on problematic situations. Stress (conceptualised as reactions to a broad range of pressures in the orchestral context), job security, dissatisfaction, frustrated ambitions, differences of opinion, and motivational problems are primary themes in these studies. Schulz (1981), in particular, provides an extensive taxonomy of complaints about working conditions, conflicts and strain factors. The three authors commonly point to social and organisational structures as the main causes of these problems, within both individual orchestras (e.g., competing authorities within social and musical hierarchies) and the larger orchestral industry (e.g., career mobility and opportunity for promotion). However, (Schulz, 1981) alone notes that many orchestral musicians see artistic conflicts as being, in one way or another, at the heart of those problems.

Developed on a similar sociological epistemology to these early studies, Murnighan and Conlon's (1991) investigation was concerned with individual actions in the social context of string quartets, but, crucially, concentrating on the artistic work of the ensemble. They used the rehearsals and performances and discussions centred around them to investigate relational dynamics and other social outcomes. Ultimately, they identified three "paradoxes" that the ensembles encountered in their work: (a) the struggle between leadership and democracy, (b) the struggle between confrontation and compromise, and (c) the "paradox of the second fiddle", that is, situations in which consummately talented professionals occupy subordinate roles. Murnighan and Conlon's (1991) article has since proved to be highly influential in the study of many types of musical ensembles, particularly in its focus on the actions and behaviours during the process of ensemble performance without reducing the complexity of social or psychological explanations. The music psychology community, despite possessing very little in common with the conceptual and philosophical framework of this study, consistently cite it among the foundational bases that motivate and justify their work (e.g., Davidson & Good, 2002; Dobson, 2010a; Ford & Davidson, 2003; Goebel & Palmer, 2009; Oakland & Ginsborg, 2013; Seddon & Biasutti, 2009; Wing et al., 2014). The important contribution of Murnighan and Conlon's (1991) investigation and the literature it has influenced is its focus on the actions of musicians in and around performance and how

this relates to both social and musical outcomes, clearly demonstrating how the two are interrelated.

The music psychology literature describes and demonstrates a clear connection between musicians' social engagement as they perform together and the kind and quality of performance that results (Dobson & Gaunt, 2013; Goebel & Palmer, 2009; Murnighan & Conlon, 1991; Seddon & Biasutti, 2009). Subsequently, as musicians' performance and social knowledges change with their mutual participation, it can be expected that there are both immediate and gradual changes to the development of their performance practices and their ability to enact them together. The research in this field by no means alleges that all conflicts are resolved or that all performances are ultimately judged as successful. Rather, it points to the many possible instances in daily working activity in which ensemble members can work at cross purposes and how such social problems can be stressors that cause musicians to perform below their best in single performances or over long periods of time. Thus, the development of ensemble musicians' social and musical practices is of great concern to the music industry when the sustainability of their working lives can be put at risk through negative consequences of their engagement.

Through concern for how optimal performance outcomes can be obtained, there has been continued interest in orchestras from the field of management and organisation research. This includes analyses of orchestral organisations themselves and the drawing of general conclusions about the functioning of these organisations. One clear theme from this research is that neither orchestras nor individual musicians operate without influence from outside their organisational or cultural boundaries. This influence may take the form of political or civic pressure on the organisation to structure itself or to operate in a certain way (Allmendinger & Hackman, 1996, 1999; Couch, 1983). Alternatively, it may include negotiations between musicians and employers about working conditions and musicians' well-being (Arian, 1974; Schulz, 1981; Sternbach, 1995). The social connections of orchestras and their members are particularly shaped by individual musicians' feelings of commitment to a specific orchestra (Faulkner, 1973a). This interacts with individuals' positive and negative experiences at work and their commitments to other artistic, instrumental or community affiliations (Parasuraman & Nachman, 1987), and can result in distinctive attitudes towards control and trust in particular orchestras (Khodyakov, 2007). In studies of orchestras to support more abstract organisational theory, situational aspects, such as advancement opportunities or availability of resources, are considered to affect individuals' happiness, satisfaction, or ability to make valuable contributions (Hackman,

2003; Mogelof & Rohrer, 2005). The studies cited from this field of management and organisational research share the underpinning assumption that personal and organisational effectiveness is (or should be) a key concern for orchestras, and they identify problems, causes, and solutions that espouse this position. While it may be idealistic to expect that individual and organisational effectiveness can always be compatible, it is clear that orchestras and musicians are compelled, from both inside and outside their organisations, to address the sustainability of their practices.

The primary issue within this literature on the social aspects of orchestral performance is how artistic values (Murnighan & Conlon, 1991) and sustainable practices (D. Bennett, 2008) are enacted amongst individuals and orchestral organisations. Orchestral performance is more than coordinating musical actions. Rather, the enactment of musical activity and the values associated with it are continually contested and negotiated through the musicians' interactions. This contest and negotiation of musical values goes beyond the walls of the concert hall, as it is part of how orchestral musicians interact with the many interrelated communities of musicians across the industry (Johnson, 2017). Practices and values are also contested around orchestral governance, both within organisations as well as in their external connections to social policy in government and education (Wolf, 2017). Thus, the sustainability of orchestral performance is interconnected with the development that forms a part of social and musical practices at both individual and ensemble levels. Because this issue of sustainability reaches beyond both individual musicians and orchestral organisations, it is important to understand how artistic knowledge and values are contested. How the musical knowledge and practices of orchestral musicians are enacted and shared can be addressed through cultural research.

Cultural Research in Orchestral Working Life

Through descriptions and explanations of orchestral musicians' practices, cultural research has identified some of the problematic aspects of orchestral activities and highlighted the importance of how musicians understand themselves and their work in particular orchestral situations (Ramnarine, 2017). Anthropological inquiry and academic and lay ethnographies all contribute to this body of research, sharing a common aim of portraying what orchestral musicians do and know as part of their highly specialised activities and social environment. This field of research identifies some of the conflicts and problematic points in orchestral practices, including the fractious nature of communities within and across orchestras and the individual nature of experience and activity requirements for each

musician. Conflict forms part of the negotiations required for musicians to play music together and this relationship shapes, and is shaped by, musicians' concepts of artistic and creative authority (Cottrell, 2004). Ultimately, orchestral musicians' subjectivities take on importance in this context, as musicians' understandings of themselves are very much tied to understandings of the activities they undertake and how those understandings develop over time.

Prior to the rise of academic research in orchestras, accounts of orchestral work practices were often produced by musicians with an interest in describing the details of their unique performance context to outsiders, such as aspiring students or a more general lay audience. The majority of literature that dealt with how musicians play together typically took the form of idealised descriptions of how rehearsals and practice should be conducted. Much of this non-scholarly material was produced by prominent performer-pedagogues and was intended for use by amateurs and students. This type of literature is still in common use by performance teachers and students today (e.g. Davis, 2004; Farkas, 1976; Frederikson, 1996; McGill, 2007). However, there have also been more scholastically focused investigations into classical music institutions (e.g., Kingsbury, 1988; Seltzer, 1975). Seltzer's book *The Professional Symphony Orchestra in the United States* might be described as a lay-ethnographic text about orchestras. Despite its non-scholarly origins, it stands as a piece of cultural research that closely follows the ethnographic processes of exploring, analysing, and presenting the culture of a particular symphony orchestra. Through its more rigorous approach to describing musicians' practices as they were observed, rather than focusing on ideal situations, it identifies many of the issues faced by orchestral musicians as part of their work that more recent scholars now find important.

Seltzer's (1975) account of the experience of working in a professional orchestra both describes the daily routines of one orchestra's activity and begins to problematise the conflicting demands of orchestral work on the musicians. On one hand, Seltzer (1975) documents the common and explicit expectation that musicians should already possess a perfected ability to perform their role. However, he also notes that there is a simultaneous acknowledgment that when "perfect" prior knowledge is insufficient (for example, when working with new people), sensitive playing that makes use of visual and aural abilities is expected to give almost the same instantly perfect results. This observation brings a contextual element into musicians' procedural knowledge. That is, it hints that expert performance consists of more than transferring learned actions of playing an instrument from

the practice room to the performance venue. Rather, it may require more dynamic adaptation of performance knowledge to new or unpredictable environments.

Another key observation made by Seltzer (1975) is that each chair in the orchestra, even within the same ensemble, can create different conditions for the musicians in terms of their sensory experiences and the requirements for how they engage in the group's performance. This reflects the individualised nature of experience recognised in contemporary ethnographic practices (Pink, 2009). Seltzer also documented the phenomenon, now well known in cultural studies, that although a term such as "orchestra" may appear to represent a well-defined group, there is uncertainty in considering exactly who is a member or not (Hager & Johnsson, 2009). This ambiguity applies also to the relative strength with which each member identifies with that group. Cottrell's (2004) more recent ethnographic account, in the tradition of contemporary cultural theory, of orchestral freelance playing in London makes a very similar argument. Both authors identify that the name "orchestra" refers to the concept of a particular community that does not just have a given physical reality, but is constructed, albeit in different ways, by those who participate in it. The issues identified by Seltzer foreshadow current academic concerns about how the experiences of individual orchestral musicians and their engagement with other musicians affect performance. Also, these observations of how each musician in an orchestra has unique sensory experiences, performance demands, and understandings of their contribution to the common activity are important to exposing the person- and situation-dependent nature of development in this context.

These discussions raise the issue of musicians' subjectivities, that is, their understanding and constitution of themselves and their relationship to the world and, germane to this inquiry into orchestral performance, to their work (Ezzy, 1997). Musicians might identify with orchestras in general, with a particular orchestra, with an intra-orchestra subgroup such as a percussion section, or with an inter-orchestra subgroup such as the orchestral percussion community in a particular country (Parasuraman & Nachman, 1987; Seltzer, 1975). In each case, there are similar common methods of attempting to incorporate oneself into those groups – recognising, critiquing, and accepting group ideals or goals (Cottrell, 2004). This observation of taking on membership in an instrumental group by participating in its practices and ideals corresponds with Dewey's (1938) argument that participating in social control is an integral part of learning within a group. In this literature, there appears to be a connection between musicians' understandings of their performance practices and their

understandings of themselves as musicians, highlighting the importance of development or the ongoing change in their understandings.

Cultural research has identified aspects of professional orchestral performance that can create particular conditions for musicians' development. It has been observed that the way musicians perceive themselves and their role in the orchestra affects their attitudes to their work (D. Bennett, 2007; Gillinson & Vaughan, 2003). For instance, compared to the soloistic responsibilities of principal wind players, rank-and-file violinists may be more likely to perceive their contribution to the orchestra's sound as unimportant and consequently believe that they are less relevant. Feelings of this kind about their level of involvement and investment in decision-making can even conflict with the imperative to "fit in" and perform the required function. This can result in frustration, disruptive behaviour, or work that colleagues consider substandard. Such differences in the experience of participating in orchestras might very well have quite different implications for how people engage in and develop understandings of their work.

Cottrell (2003) notes another common conflict, in which musicians often complain of having to comply with the dictates of principal players or conductors who rank more highly in the orchestra's hierarchy in determining matters of performance practice (cf. the "paradox of the second fiddle", Murnighan & Conlon, 1991). Relationships and social hierarchies in orchestras function in complex ways throughout working activities, with leadership and creative agency distributed throughout the orchestra (Cottrell, 2017). Situations are possible in which this distribution is balanced in a way that allows musicians to feel they are making satisfactory contributions (Khodyakov, 2007). More commonly, uneven distributions of leadership and perceived agency can occur in ways that occasionally result in frustration for the musicians. A sense of grievance may come about if musicians find that their social and musical situations clash with assumptions that they are personally endowed with the ability and authority to exercise individual artistry and creativity. The concept of artistic authority is a common trope in the cultural lore of Western music and has a prominent role in classical performance education (Kingsbury, 1988). Brinner (1995) observed, in the context of Indonesian gamelan orchestras, that performance outcomes are affected by aspects of musicians' sense of self, such as the personalities they project to colleagues and the identities and stereotypes that form part of their interactions. He argues this is because they are "directly linked to issues of authority concerning the right or the power to influence or command the musical conduct of the ensemble and its individual members" (p. 285). These observations all point to the situational requirements and demands of orchestral work, and

how this interacts with musicians' development of a self-concept that encompasses their ability and authority to perform music. This connection between self-concept and working environment encourages further exploration of the subjectivities arising from working and learning in orchestras.

Cultural research in orchestras has been largely focused around the practices and knowledges of orchestral musicians, and in doing so has identified some issues regarded as inherent problems and conflicts embedded within their working activities. This research has emphasised how individual musicians respond to their unique situations and find ways, neither exclusively positive nor negative, of adapting past practices to new circumstances. The uniqueness of how individuals experience their environments is a key theme, and investigations into sensory experience and feelings of commitment to the orchestra demonstrate how individuals' experience can be highly person- and situation-dependent. This highlights how musicians' subjectivities, or how they understand themselves and their activities, interact with how they engage in orchestral practices, their social and musical relationships, and subsequent performance outcomes. Furthermore, differences in how subjectivity is enacted through orchestral practices may impact how development occurs as a part of that engagement. Thus, it is important to also examine psychological aspects of orchestral performance for how they contribute to musicians' understandings of themselves and their practices.

Psychological Research in Orchestral Performance

Alongside cognitive and socio-psychological aspects of orchestral performance, such as perception, sensorimotor function, and communication, well-being is a growing area of concern for its interconnection with musicians' ability to engage in performance (Ascenso et al., 2017). Psychological research in music performance has traditionally had a strong association with cognitive focuses and quantitative methodologies. The field has widened considerably in later decades to include more qualitative approaches and a greater focus on factors such as emotion, interpersonal experience, and identity. Research in musicians' health and ensemble performance have been a part of this shift in emphasis. The links between stress, music performance anxiety (MPA), and physiological injury have made the experiential and socio-psychological aspects of well-being an important concern for research agendas in musicians' health (Pecen et al., 2018). Psychological accounts of how people engage in musical ensembles have almost always included social aspects to some degree. This is quite possibly because of the social nature of the activity that differentiates it from

other kinds of musical practice. The result has been an expansion of research efforts into social psychology and other forms of cross-disciplinary approaches. Musicians' perception, sensorimotor functions, or performance skills, for example, are now explored with more attention to their phenomenological, subjective, or social aspects. Musicians' well-being is acknowledged as important not just as a concern in itself for orchestral performers, but as an integral part of their ability to engage in performance effectively. The focus on well-being commonly has a key aim of maximising the sharing of knowledge about music performance between academics and performers, but it is also interrelated with how development occurs as musicians. The following sections on musicians' psychological health and ensemble dynamics elaborate the connections between their well-being and ability to engage effectively in orchestral performance.

Health and psychology in music performance.

Ultimately focused on musicians' well-being, a branch of psychological research concerning orchestral musicians is centred around health research, especially concerning stress, MPA, and injury. Over time, this field has shifted its focus from cognitive psychology (Deutsch, 2013; Hallam, 1995; Sloboda, 1985) and the physiological aspects of anxiety and stress (Middlestadt & Fishbein, 1988; Piperek, 1981b; Steptoe & Fidler, 1987) to become more inclusive of the social and cultural context of orchestral musicians' work and health (Gaunt & Dobson, 2014; Kenny, 2011; North & Hargreaves, 2008; Rickert et al., 2013). The interaction between musicians' health and sociocultural factors is regarded as a highly important issue, as an overwhelming portion of the literature on orchestral performance cited in this chapter makes mention of the relationships between orchestral work and musicians' health. This research describes a picture of widespread, chronic health problems that constitute threats to the longevity or level of orchestral musicians' ability to perform. The significant extent of health problems in the orchestral population and their effects on performance activity provide a very real motivation for increasing understanding about musicians' well-being, as well as its ongoing promotion and maintenance.

The majority of psychological health research in music performance focuses on morbidities that present as internal to the musicians, such as stress, anxiety, and their related physiological problems (Dobson, 2010a; Haider & Groll-Knapp, 1981; Halleland et al., 2009; Piperek, 1981b). Performance-related physiological pain and injury not only affect the way bodies can be expected to perform but are shown to have complex relationships with socio-psychological factors including anxiety and depression (Guptill, 2011; Kenny & Ackermann,

2013) and stress (Haider & Groll-Knapp, 1981; Middlestadt & Fishbein, 1988). Stress plays a large part in the lives of elite orchestral performers, as it is connected to a great many aspects of instrumental performance. It affects, for example, the evaluation of self and others, and the physical and organisational situations experienced by orchestral musicians in the course of their work (Halleland et al., 2009; Holst et al., 2012; Parasuraman & Purohit, 2000; Piperek, 1981a; Steptoe, 1989). The relationships amongst psychological, physiological and social aspects of health in music performance highlight the complexity involved in understanding and addressing the issue.

The socio-psychological aspects of physiological injury present difficulties in providing clinical intervention for orchestral musicians with injury. A large-scale study of American orchestral players found that 76% had experienced performance-impairing injury (Fishbein et al., 1988), and a study of Australian orchestral musicians found that 84% had experienced injury relating their occupation (Ackermann et al., 2012). There are competing findings regarding the relationship between age and the occurrence of physical problems affecting orchestral playing: A large-scale German survey found an increase of injury frequency with age (Gembris et al., 2018) and an Australian survey found no correlation, but with the suggestion that this finding may be due to a “survivor” effect (Kenny et al., 2018). A large body of literature has examined the physiological aspects of injuries and how they relate to the use of particular instruments, primarily published in the journal *Medical Problems of Performing Artists*, in music industry periodicals, or in peer-reviewed specialist medical journals. However, more recent research has focused on the psychological and social contexts of injury (Rickert et al., 2013, 2014a, 2014b), with evidence that musculoskeletal pain in orchestral populations is strongly related to MPA (Kenny, 2011; Kenny & Ackermann, 2013). Kenny and Ackermann (2013) also established a correlation between musculoskeletal pain severity and depression and suggested that the relationship is complicated by factors such as MPA and the musicians’ desire for positive self-presentation. Guptill (2011), via a phenomenological method, also found that musicians can and do attempt to control how people perceive their injuries, identifying that musicians commonly anticipate negative social consequences if they are known to be experiencing injury. These studies highlight how socio-psychological factors, through the consequences of injury, contribute to the risks faced by professional musicians, in that injury concealment behaviour can both contribute to the prevalence of injury across the industry and also prevent effective measures for addressing it.

The widespread occurrence of both stress and physical injury in the orchestral workforce is considered by researchers to be something of an open secret, comprehensively summarised by Sternbach in the book chapter “Musicians: A Neglected Working Population in Crisis” (1995). Stress and injury have been consistently correlated in studies on orchestral workplaces (Haider & Groll-Knapp, 1981; Halleland et al., 2009; Heinzle, 2001; Holst et al., 2012; Middlestadt & Fishbein, 1988; Parasuraman & Purohit, 2000; Rickert et al., 2013, 2014a, 2014b; Steptoe, 1989; Sternbach, 1995), but the different investigations have shown mixed results. Some surveys of stress in orchestras have found moderate significant differences between genders and some have found no such significant differences; Some found moderate significant differences between musicians and non-musicians and, again, some found no significant differences. The largest survey conducted was by Middlestadt and Fishbein (1988), with 2,212 participants in 47 U.S. orchestras. They emphasised that there was a large variety of factors that lead to differences in stress experience, including instrument type, status, and age. Above all, these researchers argued that the way stress occurs amongst populations of musicians is specific to each unique orchestral workplace. This perhaps suggests that measures for addressing problems related to stress and injury must also be specific to the contexts of individual orchestras and musicians.

The problems that orchestral musicians face in the different aspects of their health pose risks to their well-being and the sustainability of their work. The surveys mentioned demonstrate that the occurrence of combined physiological and psychological stressors is widespread and takes many different forms in different musicians. This means there is a high likelihood that individual musicians will experience stress and injury during their career, and that it may be connected to their unique socio-psychological and physiological circumstances. As their direct ability to engage in their work is threatened by these problems, this suggests that so too are the developmental processes that allow them to cope with long- and short-term changes in their working environment. Examining the specific occurrences of different stressors may illuminate how musicians’ ability to change their playing can be compromised.

Injury is only one aspect of musicians’ lives that can be connected to stress, as it can be part of individuals’ wider physical and socio-psychological circumstances. Parasuraman and Purohit (2000) characterised the symptoms of stress as being manifested in two main ways: boredom (e.g., related to work underload) and distress (e.g., related to work overload). In their study of professional popular musicians, Wills and Cooper (1984) highlighted the symptoms of stress as seen from an organisational perspective, including absenteeism, high

labour turnover, poor quality performance, and industrial relations difficulties. How musicians choose to react to these correlates of stress can have further effects on their daily lives and ability to perform (Steptoe, 1989). Examples of coping behaviours used by orchestral musicians in an adaptive, positive way include efforts to control relaxation through mental and breathing exercises, and through trying to maintain realistic assessments of their situation (Araújo et al., 2017). Maladaptive coping behaviours identified included the use of sedatives, alcohol, and efforts to distract themselves and others by minimising and concealing physical and socio-psychological problems (Dobson, 2010a). Clearly, given its ability to compromise musical and social performance and its high cost (monetarily and otherwise) to both individual musicians and orchestras, stress and its connected factors need to be acknowledged, understood, and addressed by all within the orchestral industry.

As an aspect of stress that is highly prevalent in music performance, MPA research is a well-established field. The early focus of this research was consistently on Western classical solo performance, only later broadening to other performance genres. In relation to orchestral performance, MPA has long been considered part of a broader context of stress factors (Steptoe, 1989; Steptoe & Fidler, 1987; van Kemenade et al., 1995), with contributing influences from both the cognitive and physiological problems of orchestral musicians. Later research in orchestral populations has found complex interconnections not just with the commonly known physiological symptoms of MPA (such as nausea or loss of muscular control), but also with performance-related musculoskeletal pain disorder, trigger point pain, and depression (Kenny & Ackermann, 2013; Kenny et al., 2016). Furthermore, MPA has been found to correlate negatively with flow in orchestral performance (see Cohen & Bodner, 2018; Csikszentmihalyi & Csikszentmihalyi, 1992). These connections indicate that a broad context of psychological and social factors affects MPA in this context (Ackermann et al., 2012; Kenny, 2011; Kenny & Ackermann, 2013; Kenny et al., 2016). As with injury, self-reporting of MPA is a complex issue for orchestral musicians, as it can affect their perceptions of their own performance and mental health (Kenny & Ackermann, 2013). It can also have negative impacts on the social and organisational situations through which orchestral musicians operate (Papageorgi et al., 2011). Thus, it is important to recognise the complex connections between MPA and other aspects of orchestral activity, as MPA is likely to be present throughout much of the high-performance context of professional performance.

Although the litany of stressors in musicians' work is well-documented and supported by various research projects, debates remain about what can be done about these stressors. Far and away the most common suggested remedy is more or better education for students,

orchestral performers (both new and long-serving), and orchestral management personnel (Heinzle, 2001; Sternbach, 1995; van Kemenade et al., 1995). This suggestion is certainly justified in its assumptions that students are largely unaware of how stress impacts daily life in orchestras (Araújo et al., 2017; Steptoe, 1989). Steptoe (1989) found that professionals nominated irregular hours, travelling, separation from family, and the monotony of rehearsals as their main stressors. These were consistently under-recognised as future problems by tertiary students, who predicted that their main stressors would be finding regular employment, competition, and “back-stabbing” from colleagues. Such a discrepancy between professional knowledge and student expectation gives a clear indication that these students were lacking in advanced knowledge of what their future professional life would be like. Although tertiary music students have been found to have generally high levels of overall well-being, they also display high levels of potentially harmful attitudes towards health and stress management that may affect their future well-being (Araújo et al., 2017). Taking a different perspective, Rickert et al. (2014a) argued that many stressors were external, that is, outside the musicians’ control, and existed because the industry practice was not making the necessary changes to accommodate known health issues for musicians. This assertion represents a departure from the usual recommendation for “better education at all levels”, as it invites a discussion over what contribution, if any, can be made by individuals - a long-running dispute in discourses about culture. Research on musicians’ health may be unified in identifying well-being as an important concern in orchestral performance, but it appears to disagree about how this can be addressed by individuals and organisations.

Around the subject of health, psychological research has demonstrated that problems such as injury, stress, and MPA are widespread in the orchestral workforce, making the promotion of well-being in orchestral practices important. Socio-psychological and physiological health problems are known to be commonly interrelated, and their treatment is often complicated by the psychological and social circumstances that contribute to and arise from them. These health problems are often highly specific to the individual musicians and unique workplaces, and connected to particular instruments, work roles, and personal histories. Consequently, strategies used to respond to or cope with these health problems are highly individual, and they can manifest in ways that are constructive or harmful to musicians’ ability to perform and perception of their own development. In calling for better education about these stressors, a statement is made that it is possible for musicians to change their responses through learning experiences in either their prior training or ongoing therapeutic and development programs. However, not all voices are united in this statement,

as some point out that the unique socio-psychological context of stressors makes their treatment in the moment and their prediction for prior education extremely difficult. The relationship is unclear, then, amongst musicians' experiences of socio-psychological health problems, their well-being, and their learning and development in performance. This relationship is addressed further by examining the connection between learning and engagement in ensemble working activities.

Ensemble dynamics and psychology in music performance.

A central concern of research in musical ensembles is understanding the social context of psychological phenomena. Young and Colman (1979) utilised psychological concepts to analyse the social parameters of a string quartet. In particular, they pointed out the effect co-action can have on musical performance; that is, musicians' performance can be enhanced, hindered, or otherwise changed by the presence and actions of others in an ensemble. This theoretical proposal was seen as seminal, as the concepts they outlined became a popular framework for investigating ensemble performance. An influential study by Davidson and Good (2002), drawing on Young and Colman, argued that the interaction between musical and social coordination is affected by several socio-psychological factors, including personal relationships amongst musicians, experiences of anxiety, as well as the "purely musical" situational demands of the performance. They provide an example in which a string quartet had to improvise and coordinate fluctuations in tempo during a performance in order to provide "space" for their second violinist's technically challenging solo (Davidson & Good, 2002, p. 196). This was an occurrence made necessary by problems of coordination the quartet experienced moments earlier in the performance, as well as their collective understanding of each other's relative ability. This study provoked an increase of interest in researching the social dynamics of string quartets and other Western art music ensembles from a socio-psychological perspective (e.g., Badino et al., 2014; Biasutti et al., 2016; Wing et al., 2014). Studies such as these often focus on concepts of perception and sensorimotor processes, with associated research lineages, such as cognitive psychology, that do not traditionally incorporate social elements. However, the context of their subject demands that they contribute to an explanation of how musicians can function *together* as opposed to by themselves.

In seeking to comprehend how psychological and social processes are combined, studies of orchestras have frequently focused on the phenomenological, or experiential, aspects of orchestral performance. These socio-psychological investigations have contributed

nanced explanations of the complexity of engaging in orchestral work. Gaunt and Dobson (2014) used the metaphor of a “radar” to describe musicians’ situational awareness as comprehending “deep listening, awareness and responsiveness and spontaneity” for combined musical and social contexts (p. 300). This explanatory metaphor sets out a description of a complex and interacting set of technical, musical, and social skills categories that are always bound to specific contexts and are enacted through awareness and responsiveness to other musicians. Through incorporating interpersonal aspects into these concepts, their investigation highlighted the importance of identity and relationships on the skills and qualities required for orchestral performance (Dobson & Gaunt, 2013). Gilling (2014) tied this concept even closer to experienced actions by describing orchestral performance as a “sense-making, sense-giving” activity, connecting embodied knowledge with coordination amongst musicians. Reciprocity has been identified as a characteristic of this embodied knowledge involved in the simultaneous interactions between musicians in ensemble playing (King & Gritten, 2017). Experiential knowledge, attitudes, emotions, and identities, as they arise from interactions with colleagues and organisations, have subsequently been brought to the forefront of the research agenda in ensemble performance.

Through investigating the self-evaluations orchestral musicians make of their work, socio-psychological studies have raised issues about the relationality between self and orchestra, such as career satisfaction, happiness, social connection, and isolation. Brodsky (2006) reported that although orchestral positions could represent the height of career ambitions for some instrumentalists and a failure in solo or chamber music career ambitions for others, orchestral musicians could experience emotional and identity-related benefits from membership in their orchestra’s activities. Yet, for the same reasons, difficulties experienced in this membership could also be accompanied by disappointment, resentment, and self-doubt. Brodsky argues that the musicians’ satisfaction and motivation to engage and continue working is thus based on a continual assessment of the gains, costs, and risks of their involvement with an orchestra. Furthermore, orchestral musicians’ engagement in the musical and social activity of the orchestra is argued to be crucial to their sense of self (Dobson, 2010b; Kivimäki & Jokinen, 1994). This affects not only their relative experiences of satisfaction and stress, but also the feelings of freedom and constraint the musicians experience as they engage in those musical and social practices (Dobson, 2010b). These studies illuminate the social and practical complexity of orchestral work. They also emphasise that musicians’ well-being, as expressed through levels of satisfaction, self-

awareness, motivation, and social connection, is crucial to musicians' performance engagement and perceptions of their development.

The relationship between orchestral musicians' sense of self and the activities of their orchestra prompts questions about the relationship between the collective and individual actions in orchestral work. Two significant theoretical positions proposed to address this issue both compare orchestral cultural practices with a particular concept of community of practice, or CoP, that pays particular attention to the role of learning (D. Bennett, 2008; Gaunt & Dobson, 2014). Both theories present CoP in the form of a model for orchestral organisational practices and musicians' behaviours as they work together. These theories propose that musicians' purposes in performance are openly shared, and the group activity in rehearsal and performance is considered to demonstrate the existence of openly shared purpose. They regard the orchestra to be a learning environment, as the musicians involved in the research understood themselves to be continually learning as performers. The theories also identify "tensions between individual and collective development" (Gaunt & Dobson, 2014, p. 305), making an account of how individual musicians, whether newcomers or old-timers, can contribute to the development of an orchestra's practices over time and repeated activity. Similarly to Brodsky (2006), Gaunt and Dobson (2014) perceived this to represent opportunities that musicians could navigate throughout their career, inside and outside of the orchestra, for personal or musical development. The key theme in their findings is that orchestral musicians' practices develop over time and through engaging in performance with others, making it important to understand everyday working activities.

Whilst the comparison of orchestral cultural practices with this concept of CoP highlights the importance of learning, questions remain over whether the concept can effectively take account of the complexity of musicians' learning. This is because the CoP concept being used is perhaps too focused on the positive outcomes of musicians' practice and development, privileging cooperation over conflict. The authors of these theories acknowledge the negative experiences of orchestral musicians; indeed, D. Bennett (2008) produces a comprehensive demonstration of the social, psychological, and cultural impacts of musicians' negative experiences. Gaunt and Dobson (2014) also emphasise that pressure and anxiety caused by performance amongst peers can negatively affect performance and development. The potential problem lies in the use of CoP as a model of ideal practice, as it is not at all clear that the orchestra represents a single community or single set of practices. Neither is it clear from this concept of CoP how the musical and social hierarchies in orchestras help or hinder developmental processes (Hager & Johnsson, 2009). Viewing the

negative aspects of the tension between individual and group objectives in development as setbacks to a “good” CoP appears to limit understandings of daily working experiences. It is suggested here that an account of individual and group development should include a plurality of experiences, positive and negative, as part of musicians’ collective practices because both may make important contributions to the development of performance ability over the course of a career.

From a variety of perspectives, the psychological literature on orchestral performance shares the concern that management of work and life can be problematic. The sanitised conceptions of musicians’ work mentioned earlier stands in stark contrast to the realities described by this research. For example, stability of employment does not necessarily solve all the problems of the “starving artist”, to use a common trope, as it introduces other complications, such as unsociable hours or different kinds of anxieties and political pressures (Steptoe, 1989). Other stereotypes such as the “dedicated artist”, putting up with any kind of suffering for the love of their art (Dobson, 2010b), or the “master artist”, possessing abilities and knowledge that are somehow superhuman or ineffable (Brodsky, 2006), are argued to be highly misleading to outsiders. Further, by creating unrealistic expectations for musicians themselves, these assumptions can be damaging to musicians’ physical and psychological health, as well as their ability to effectively manage their careers.

For the music psychology research community, the conflict between music industry myths and the realities musicians experience in their work drives an agenda for the “de-mystification” of performance knowledge, particularly for elite performance (Williamon, 2004). This involves putting to one side the supposedly ineffable qualities of artistic activities and focusing instead on the physiological, behavioural, cognitive, affective, or socio-psychological processes involved (Hargreaves & North, 1997; Lehmann et al., 2007; Parncutt & McPherson, 2002; Sloboda, 1985). Quantitative and qualitative methods have been used in varying proportions to explain musical performance practices in the language and within the epistemologies of academic discourse. For this research, it is considered important to address issues of well-being as an integral part of musicians’ performance. Taking account of musicians’ well-being as a part of their performance is part of the effort to make the tacit and “folk” knowledge of professional orchestral musicians accessible to academic interpretation. This scientific consolidation and sharing of knowledge about performance is important to orchestral practitioners because of the ongoing need to inform orchestral musicians, organisations, and students about practices or working conditions that can contribute positively and negatively to their working lives.

Understanding how orchestral musicians engage in ensemble performance requires explanations of co enactment in this context, incorporating personal, social, physical, and musical aspects of performance. Research in this field has responded by redefining how musicians' musical knowledge arises to include concepts of embodied, experiential, and sense-making knowledges specific to orchestral skills and practices. Through repeated participation in orchestral practices, complex interrelationships have been found to develop amongst musicians' engagement with their performance activities, their sense of self, and their ongoing well-being and ability to continue their participation. Thus, everyday activities in orchestral performance are seen as a crucial site of change and development of musicians' performance practices over time. This development does not always occur in positive ways, and so an understanding of learning and development in this context needs to consider positive and negative experiences, consensus, and conflict within orchestral practices. The danger of assuming that only positive experiences and development occur is that this may compromise musicians' ability to understand and engage effectively with their work over the course of their careers. Direct investigation of musicians' lived experiences is necessary for the de-mystification of artistic practices in the orchestral context, so that musicians and researchers have greater understanding of musicians' engagement with their activities across the orchestral workforce. In the context of orchestral performance, development has been identified as important in the context of the interaction between individuals' practices and the practices of the orchestra (D. Bennett, 2008; Gaunt & Dobson, 2014). As this development arises from musicians' participation in the shared performance practices of the orchestra, it is important, then, to examine learning and development as it relates to orchestral performance.

Developmental Research

Social, psychological, and cultural research on orchestras has established the importance of comprehending developmental processes, as they are connected to both orchestral practices and musicians' well-being. A small but fragmentary literature exists on learning and development in orchestral musicians. Among this literature, development itself is conceived of in various ways. Some work derives from linear models of learning, focusing on attainment or mastery of skills and goal-oriented, deliberate practice-centred conceptions of learning (Bonneville-Roussy et al., 2011; Burt-Perkins & Mills, 2008; Corkhill, 2005; Hallam, 1995). Others identify development with ontogenetic, or lifespan, processes that are continuous and more often non-linear, inasmuch as they are dependent on sociocultural or biological (health) factors (Brodsky, 2011; Gembris & Heye, 2014; Hager & Johnsson, 2009;

Johnsson & Hager, 2008; Krampe, 2006; Manturzewska, 1990; Oakland & Ginsborg, 2013). The broader timespans and social contexts included in the latter make a case for considering learning and development as highly person- and situation-dependent processes, in which individual musicians' intentions and practices can change considerably. Overall, a range of life-stages are covered by this literature, here categorised for expedience as pre-career, mid-career, and late-career.

The research that focuses on pre-career development consistently expresses the concern that the links between conservatoriums and the orchestral industry are, in general, not what they should be and that transitions into musical workplaces are widely misunderstood. The argument is often taken that many of the teachers, administrators and students within tertiary music schools continue to have an unhealthy focus on orchestral jobs as a primary outcome for classical musicians (D. Bennett, 2008). A disconnect is reported to exist between what is taught in conservatoriums and what is required of elite musicians (Bonneville-Roussy et al., 2011; Corkhill, 2005), particularly in reflecting the social aspects of performance (Gaunt, 2017) and the difficulties in making ensemble performance a useful and assessable part of the curriculum (Burt-Perkins & Mills, 2008). Many conservatoriums have made concerted responses to challenges such as these, developing improvements in the links between industry and curriculum as well as identifying appropriate, practice-led pedagogies (Bartleet et al., 2012; D. Bennett & Bridgstock, 2014; D. Bennett & Hannan, 2008; Gaunt & Westerlund, 2013; Lebler et al., 2014). The studies of pre-career orchestral performers favour goal-oriented explanations of learning processes that focus on students' mastery of skills, and they encourage this to be made part of conservatoriums' pedagogical focus. They conceptualise learning in later career as being largely similar and propose pedagogies that foster deliberate practice or identification of performance goals for future professional use.

In contrast, others argue that the learning of pre-career orchestral performers needs to be viewed as ongoing and situated within sociocultural contexts (Gaunt & Westerlund, 2013). A study conducted in the Sydney Symphony Orchestra's student development program proposes the concept of "graduateness", emphasising ongoing adaptation rather than the attainment of goals or stages (Hager & Johnsson, 2009; Johnsson & Hager, 2008). The authors of this study argue that, for orchestral performance, the individual-focused activities (solo practice and performance) of conservatoires are context-limiting for future orchestral work. On the other hand, the "living curriculum" of guided placements within a professional orchestra are sources of context-rich vocational experience. These researchers locate

important elements of the students' learning within their participation in the context of orchestral work, comparing this argument favourably with the concept of legitimate peripheral participation (Lave, 2008; Lave & Wenger, 1991). However, they distance their findings from this concept over any implication that learning is "complete" once full membership in the orchestra is attained, as this concept is sometimes argued to impute (Fuller et al., 2005). The evidence they found to identify students' continuous learning through participation amongst the professional musician mentors in this study raises questions about how learning continues amongst musicians who are already working in orchestras.

For mid- and late-career orchestral musicians, there is evidence that development is dependent on the interplay between personal and sociocultural contextual factors. This can take the form of musicians' personal historical experiences, or "biographical" events (Moore et al., 2003). Some of the studies in the development of professional musicians (Biasutti, 2013; Hallam, 1995; Krampe, 2006; Manturzewska, 1990) have focused on cognitive psychology-based explanations and identify specific cognitive processes and strategies for deliberate or conscious practice. The lifespan scope of these studies acknowledges the changing sociocultural contexts that musicians must adapt to throughout their careers. They describe development as conforming to "typical" stages in the biographies of "typical" professional musicians, for example, the rise and fall of performance ability followed by a rise of interest in teaching, and it has been argued that transitions into and out of the profession should take these stages into account (Middleton & Middleton, 2017). In contrast to these idealised progressions, Oakland and Ginsborg (2013) and Gaunt and Dobson (2014) demonstrate that the impacts of sociocultural factors in specific working situations can be highly uncertain or unpredictable in terms of developmental outcomes for professional musicians. Similarly, Brodsky (2011) and Gembris and Heye (2014) argue that, in later career, ageing produces highly situation-dependent problems and possibilities for orchestral musicians. This includes the stabilising benefits of experience and destabilising problems of declining physical health, all of which differ from one individual to the next. Dobson and Gaunt (2013) call for more research to be conducted into specific instances of musical and social interaction for better understanding of contemporary working practices. It appears that this is also necessary for furthering our understanding of the connections between musical and sociocultural engagement and learning in orchestral workplaces.

The role of practice may be a helpful focus in accounting for these complex personal and sociocultural aspects of musicians' learning and development through working life. Ontogenetic studies in music performance and development show that the plurality of

experiences can make learning unpredictable in its antecedents and outcomes (Gembris, 2006; Krampe, 2006; Manturzewska, 1990; Oakland & Ginsborg, 2013). Ageing provides an example of this, as it has benefits and disadvantages for development that vary considerably from one individual to the next, based on how their practices are related to their health, personal history, and social interactions (Brodsky, 2011; Gembris & Heye, 2014). Through examination of the unique practices bound to the context of popular music performance, both intentional and unintentional learning processes have been identified as being shaped by how the musicians engaged in the specific cultural practices of their work (Green, 2002; Smart & Green, 2017). Although those studies of popular music import terms from education that privilege deliberate instruction, such as formal and informal learning, they demonstrate that learning occurs in different ways in response to the musicians' engagement in various practices. The most important point raised here is that the musical culture that is specific to the popular music genre is central to the way those musicians relate to each other and develop practices together. In applying this to professional orchestral performance, a focus on the cultural practices may help in understanding the different ways that musical knowledge occurs, what performance is, and how the musicians engage in it together.

It appears, then, that investigations of musicians' practices together with musicians' learning can be mutually helpful. Research into the links between music performance education and the profession emphasises that elements of professional performance can be used to inform pedagogy. Not only this, but the ongoing adaptation of students in an orchestral workplace and the continuous "re-making" musicians engage in through their creative practice (Rink et al., 2017) also raises questions about learning that occurs as members of that workplace engage in performance. When considering learning at later stages of careers, the influence of individual musicians' histories and situations is apparent. Accordingly, it is important that understanding learning and development in working musicians must take those individual psychological and sociocultural aspects into account. Cultural practices may influence the intentions and actions of groups and individuals; thus, it is important to consider how it ties musicians' development to specific workplaces and practices.

Although it is not an extensive field of research, investigations have demonstrated that development in orchestral musicians is highly person- and situation-dependent, involving personal-historical, health-, and working-role-related influences that can change throughout their careers. Understandings of pre-orchestral career learning and development are often tied to arguments about the links between educational practices and the music industry with an

associated focus on goal-oriented mastery and linear causality in learning processes. On the other hand, investigations of pre-career participation in orchestral working activities have proposed explanations of continuous learning and adaptation through coparticipation (i.e., the interaction between agency and affordance: Billett, 2002a) with other orchestral musicians. This emphasis begs the question of how learning continues within participation in mid- and late-career orchestral musicians. Research in this area has identified “biographical” or personal-historical, sociocultural, psychological, and health-related factors as having an impact on development. Investigations that focus on cultural practices may be a way of bringing these complex factors together. In this way, development and practice may be understood together in how they manifest in specific instances of individual and social circumstances over time and through coparticipation in orchestral activities.

Investigating Learning and Development in Orchestral Performance

Orchestral performance is accorded a high value among the classical music industry and tertiary music institutions, and a deeper understanding of how musicians engage in orchestral work is important to the students, educators, performers, and administrators involved. Academics have repeatedly outlined the need for research that more accurately explores and reflects the concerns of musicians’ entire working lives, including those social and professional aspects not covered by a focus on the act of playing an instrument (D. Bennett, 2009; Bridgstock, 2005; Creech et al., 2008; Teague & Smith, 2015). Accordingly, orchestral performance research has aimed to include those wider personal concerns, raising questions about performer education, orchestral practice, broader personal development, lifelong learning, and ageing.

The issues and difficulties faced by orchestral musicians in their work are many and complex, and musicians’ sense of self and development are crucial to how they engage with their work amidst the difficulties. Social research emphasises that economic, personal, and social sustainability are important to both individual musicians and orchestras for their ability to continue to perform (Seddon & Biasutti, 2009). Changes in practice, then, are interrelated with the social aspects of how individual musicians and orchestral organisations engage in their performance activities. Cultural research has found that musicians encounter experiences unique to their personal history and circumstances, instrument, and role in the orchestra, and to engage in orchestral performance on the basis of their subjectivities, or their understandings of themselves and their activities (Brinner, 1995; Cottrell, 2004; Seltzer, 1975). As musicians’ subjectivities affect engagement in and contesting of orchestral

performance, they also affect development and change in musicians' practices as part of that engagement.

Psychological research into orchestral performance has highlighted the importance of well-being to orchestral musicians' ability to perform and to the longevity of their careers. By affecting musicians' perceptions of their development over time and their future performance ability, problems such as injury and MPA have the potential to affect the long-term development and longevity of musicians' careers (Ackermann et al., 2014). Whilst some argue that more or better education on these issues is the answer, others suggest that the problems lie in the orchestra's activities themselves and their social and organisational circumstances (Rickert et al., 2014a). Regardless of this disputed and relatively under-researched point, further investigation of musicians' engagement in their work as they coparticipate in orchestral performance is important to understanding the psychological and social aspects of the problems faced by musicians.

Direct investigation of orchestral musicians' experiences and practices, including consensus and conflict, change, and development, is important to de-mystifying orchestral practices so that musicians, researchers, arts organisations, and students can better understand orchestral performance. To understand learning in the multiplicity of orchestral work practices and performance experiences, focusing on the musicians' performance as cultural practice allows the examination of developmental processes as orchestral musicians engage in performance together.

The primary issue raised in this chapter is that learning and developmental processes are key factors in how professional orchestral musicians engage in their work, but how they occur requires further investigation. The importance of understanding learning and development in this context lies in their contribution to musicians' performance outcomes and their interrelationship with musicians' well-being and career sustainability. The next chapter examines how learning and development might be conceptualised in the context of orchestral performance to provide deeper understanding of this issue.

Chapter 3: Conceptual Background for Understanding Learning in Professional Orchestras

Within the context of professional orchestral performance, learning and development are conceptualised in this chapter as changes in what musicians know, can do, and value, arising intersubjectively from coparticipation in the orchestra's practices. Coparticipation refers to the dual processes of social and physical affordances and individuals electing to engage with those affordances (Billett, 2002a, 2002b). In the previous chapter, it was proposed that, with sustainability of orchestral practices being a concern for orchestral musicians, learning is a key part of their social, personal, and cultural participation in orchestral performance. This third chapter examines how learning and development can be understood within the context of professional orchestras to better comprehend how musicians engage successfully in their work. It elaborates a conceptual framework that explains musicians' participation in orchestral cultural practices in connection with musicians' agency and intersubjectivities, or understandings of self that arise through interaction with others. To elaborate learning within orchestral practices, a concept of learning and development is proposed that includes the constitution and reconstitution of shared participation. Using this conceptual background, the following research question is proposed: How does intersubjectivity arise as professional orchestral musicians engage in and learn through their work? The next chapter describes the investigation carried out to explore musicians' coparticipation in orchestral practices and how intersubjectivity and learning are related to their engagement.

This research project takes account of the agentic nature of individuals' learning in all situations, not just those times, places, and situations commonly designated as occasions for learning, such as workplace training and development programs, schools, or university courses. It points instead to the ongoing constitution of personal-historical understanding as individuals engage in their daily activities and proposes that learning is associated with this continual reconstitution of understanding (Billett, 2010a). It is a common expectation that professional orchestral musicians be not merely proficient, but also demonstrate near-perfect performance knowledge from the beginning of their appointment (Seltzer, 1975), which is a position that does not often allow for musicians to undertake intentional training activities. To do so would require them to publicly adopt the role of a learner, potentially making them socially vulnerable by threatening their authority to occupy their orchestral position. Thus, it

might be expected that musicians' learning may often arise in a manner that is covert, or at least unobtrusive. This study, therefore, seeks to examine and explain musicians' learning that occurs as an outcome of their engagement in orchestral work.

An agenda for increasing knowledge about professional orchestral musicians' learning through work is supported by the discourses surrounding lifelong learning and workplace learning. The previous chapter identified the problems orchestral musicians face in maintaining their well-being and the sustainability of their activities. Many of the challenges stem from the complex psychological, social, and physical realities of engaging in orchestral work itself (D. Bennett, 2008; Sternbach, 1995). Understanding the connections between musicians' participation and learning processes is argued to be of benefit to the musicians, orchestral organisations, and educational institutions involved (Johnsson & Hager, 2008; Lamont, 2011). These topics fall into the discourse surrounding lifelong learning, which is broadly considered to be the continued learning processes experienced by individuals across their lifespan both inside and outside of formal educational situations (Holmes, 2002; Jarvis, 2009, 2010). Lifelong learning is regarded as providing value to the practices of individuals and organisations, although the qualities and values of this learning are disputed, for example, where individuals' learning is commodified or considered largely in terms of organisational productivity (Hager, 2011). This inquiry here intersects with perspectives on workplace learning that focus on vocational aspects of adults' learning as they engage in professional activities (Fenwick, 2006; Harteis et al., 2006; Lave, 2008; Lave & Wenger, 1991; Malloch et al., 2010). This includes how subjectivities and professional knowledge develop through experience and participation with work-related communities. Lifelong and workplace learning, in these broader conceptualisations, are commonly identified as crucial to economic and social development by national and international policy organisations (Faure, 1972; OECD, 2010). Using these concepts to inform working practices addresses policy concerns for understanding organisational productivity and social engagement, as well as individual workers' continued employability, well-being, and effectiveness within changing working communities and wider social participation (Billett, 2017). Accordingly, this project extends current understandings of musicians' participation and learning in professional orchestral work through the conceptualisations of learning and engagement established in this literature.

Subjectivity and Agency in Workplace Learning

The music performance literature has raised important questions about the relationships between musicians' working practices and their learning processes, and the field of workplace and lifelong learning research has identified the role of subjectivity and agency as important to this relationship (Billett, 2010a; Billett et al., 2006; Billett et al., 2008; Ezzy, 1997; Farrell & Fenwick, 2007; Fenwick, 2001; Malloch et al., 2010; Newton, 2004). Subjectivity refers generally to individuals' understanding of self that arises from conscious engagement with the world around them (Mansfield, 2000). This is connected to learning through the moment-to-moment reconstitution of understanding that occurs through participation or interaction (Billett et al., 2006). Agency refers to individuals' enactment of intentionality and is regarded as mutually constituted with its sociocultural context, and it is related to learning through its role in the contesting and negotiation of cultural practices (Eteläpelto et al., 2013). These concepts are considered here to connect musicians' engagement in professional orchestral performance and the development of their personal understandings of being and doing in that context.

Subjectivities are held here to contribute a useful concept for illustrating a contextualised relationship between orchestral musicians' learning processes and engagement in their work. How musicians understand themselves and their work was identified as a key influence on aspects of their engagement in orchestral performance, affecting their satisfaction, happiness, and feelings of social connection or isolation (Brodsky, 2006). The effect these aspects of engagement have on musicians' negotiation of orchestral practices has been connected to developmental concepts (D. Bennett, 2008; Gaunt & Dobson, 2014). Correspondingly, the workplace learning literature identifies learning processes within subjectivities, pointing to the continual reconstitution of understanding that both shapes and is shaped by personal history as well as interpersonal activity. More fluid than concepts of identity, subjectivity is how individuals perceive, understand, construe, and enact reality, that is, themselves and the world connected to them (Salling Olesen, 2006). It links consciousness to experience, memory, and perception as well as the agentic activity of constituting knowledge, mediating how individuals enact their reality and engage with the world (Evans, 2007; Valsiner & Van de Veer, 2000). Thus, it is maintained that thinking, acting, working, and learning are so entangled in their identifiable motives, actions, and consequences, that they can be considered simultaneous and coincident (Billett & Somerville, 2004). By including the concept of subjectivities in investigations of orchestral musicians' learning

processes, those connections amongst doing, thinking, and learning are kept in focus to develop a contextualised understanding of their practices.

Engaging in ensemble performance requires the negotiation and coordination of interrelated musical and social practices (Murnighan & Conlon, 1991), and personal agency has a role to play in the doing, thinking, and changing of understanding involved in that engagement (Billett, 2006; Billett & Pavlova, 2005; Smith, 2005). Agency is regarded here as the capacity for individuals to actively affect themselves or their environment, such as engaging in the social contesting of practice or in the personal reconstitution of understanding (cf. Archer, 1996; Emirbayer & Mische, 1998; Eteläpelto et al., 2013; Kakavelakis & Edwards, 2011). This means that agency is connected to both individuals' intentionalities and their historical-narrative understanding of themselves (Ezzy, 1997). In the context of this investigation, exploring how orchestral musicians exercise agency can help identify how their negotiation of practices is shaped by their musical and social intentionalities. It can also assist in examining how personal agency changes musicians' subjectivities through affecting their understanding of themselves and the work in which they are engaging.

In this conceptualisation, individuals' agency within a shared activity, such as orchestral performance, affects more than their immediate motivation towards performance outcomes. Rather, it changes the person, shaping their own subjectivities towards their activity. That is, the quality of personal agency is relationally interdependent with the social environment: affordances within the environment constrain individuals' choices, but their agentic actions also affect their constitution of that reality (Billett, 2006). Individuals' personal-historical subjectivities are an intrinsic part of their interaction with others and their shared activities, meaning that cultural practice is recreated and transformed rather than merely reproduced (Rogoff, 2003). This conceptualisation of agency is significant to this study of orchestras, as it suggests that the daily negotiation between colleagues of how to play music does not just affect the resultant sound of the performance. It positions agency as a factor that constantly shapes how musicians constitute their general and particular understandings of what orchestral performance can be. This conception of agency also challenges the notion that one person entering an orchestra of 70 or more musicians might be merely conforming to an established culture. Instead, it suggests that they necessarily begin to share in the co-constitution of its performance practices through contesting and recreating them.

Whilst subjectivity and agency are not the same thing as learning, learning through working activity is often described using these concepts to focus on how individuals'

understandings can change as they engage in work. The study and theorisation of learning in workplaces has seen the decoupling of the concept of learning from the activities and social paradigms of educational institutions (Billett, 2010b; Billett & Somerville, 2004; Lave & Wenger, 1991). Instead, learning is explained within the concrete contexts of individuals' subjectivities, that is, their ongoing constitution and reconstitution of daily experience and the subsequent reshaping of understanding self and activity (Billett et al., 2006; Fenwick, 2008). Personal agency is also identified as having an important role in changing understanding, as it is the contextualised enactment of individuals' current knowledge and intentions for future possibilities (Eteläpelto et al., 2013; Evans, 2007; Fenwick, 2006). In an orchestral context, it is proposed here that musicians' learning processes can be gainfully explored through studying their agentic engagement in their work and the associated changes in their understanding of themselves and their performance activity.

Considered within this conceptual background, learning and developmental processes are regarded here as changes in understanding that are interconnected with personal and sociocultural aspects of engagement and occur over shorter and longer periods of individuals' experience (Rogoff, 1990; Valsiner & Rosa, 2007a; Vygotsky, 1997; Wertsch, 1985). Orchestral musicians may change, for example, their perception of their performance and how they intend to play in the near future in response to a single instance or interaction during performance. This may produce a relatively short-term change in performance knowledge, an instance of microgenetic learning in which their engagement can be shaped by the larger course of their development. Over a period of years, to take another example, musicians may find that their broader performance knowledge has adapted in response to changes in the membership of their instrumental section. Long-term changes such as these can be characterised as ontogenetic development (Scribner, 1985), that is, broad patterns of change over the course of a career or lifetime. This long-term development is likely to be constituted through the myriad instances of microgenetic learning experienced in their daily interactions with their section colleagues. This conception of interaction between microgenetic and ontogenetic changes in understanding and practice, and a subsequent distinction between learning and development, comes out of sociocultural perspectives on development (Vygotsky, 1997; Wertsch & Tulviste, 1992). In the context of orchestral performance, it is important to investigate the interactions between longer term patterns in musicians' ontogenetic (i.e., long-term) development and microgenetic (i.e., short-term) learning processes that occur during moment-to-moment performance practices.

To summarise this conceptualisation of learning so far, musicians' subjectivities and agency are important to how orchestral performance knowledge develops and is enacted. The concept of subjectivities connects doing, thinking, and learning through engagement (Salling Olesen, 2006; Valsiner & Van de Veer, 2000), and this is exercised within the context of orchestral musicians' participation in performance practices (Johnsson & Hager, 2008). At the same time, agency plays a role in how musicians contest and negotiate those practices (Evans, 2007). The social context of their agentic action changes the individuals involved and their understandings (Rogoff, 2003). Learning and developmental processes can thus be investigated through examining how individuals' subjectivities and agency arise as they participate in their work together (Billett, 2015), and this can be applied to understanding orchestral musicians' development in the context of their work. Musicians' long-term, ontogenetic development and shorter term, microgenetic learning processes interact with each other (Wertsch, 1994), and it is important to comprehend how this occurs within the orchestral context (Rink et al., 2017).

Understanding the role of embodied and procedural knowledge in orchestral performance requires a focus on the practices that mediate learning and development. It is not uncommon for learning to be most commonly linked with a cognitive, in-the-head conception of knowledge, and procedural knowledge, as it pertains to bodily awareness, feeling, and movement, is often overlooked (Somerville, 2006). Individuals' experiences of body and spatiality play a central role in their subjective knowledge of how they engage in their working practices (Somerville & Lloyd, 2006). Subjectivities that arise from orchestral work are influenced by musicians' embodied experiences of sound, sight, motion, and kinetic affordance and their agentic constitution of musical sound and its meaning. Investigating the embodied aspects of musicians' performance knowledge enables a better understanding of both the work that they carry out and how they learn as a musician in an orchestra.

Individual sensory awareness and experience (e.g., visual, auditory, and spatial) are aspects of subjectivity that have particular relevance to orchestral practice, particularly in terms of how they contribute to embodied experiences of subjectivity. The concept of embodied subjectivity, arising from the work of Merleau-Ponty (Merleau-Ponty, 2013; Moya, 2014) and feminist theory (Lengermann & Niebrugge-Brantley, 2001; McLaren, 1960), concerns the concept of self that is mediated and influenced by the body and bodily experience, including gender, as well as auditory or visual perception and knowledge. This aspect of subjectivity has important ramifications for learning in occupations where physical performance is central to the working activities and where knowledge is often not shared

verbally (Somerville, 2006). Seltzer's (1975) participatory observations found that the acoustic conditions are different for every seat in the orchestra, and that musicians change their way of playing according to the challenges of the space that they physically occupy to create an appropriate musical product. Their knowledge of how to engage in orchestral performance is thus intimately bound with their embodied knowledge of how to listen and how to understand their contribution. This connection points to a deep relationship between the empirical historicity of players' experience and the development of their procedural knowledge of playing.

As musical performance ability can be so often attributed to individual effort rather than socially connected practices (North & Hargreaves, 2008), it is important to contextualise orchestral musicians' procedural knowledge within their coparticipation in orchestral work (Billett, 2002b). Lave and Wenger's well-known and much debated *Situated Learning* (1991) identifies learning within individuals' experience of participation in activity with others, rather than a purely cognitive response to pedagogical intervention. Through looking at how newcomers interact with and become old-timers, it demonstrates that examining everyday interactions in and around the workplace is important for understanding the relationship between shared practices and shared knowledge. There is a wide variety of interpretations of their subsequent community of practice (CoP) theory, but the term often conceptualises learning in a way that emphasises the participation and enacting of roles, as well as individuals' gradual awareness and embodiment of procedural knowledge within a group (Chaiklin & Lave, 1993; Hager et al., 2012; Nicolini et al., 2003; Wenger, 1998). CoP theories have been applied to orchestral workplaces to assist in conceptualising them as learning environments and to emphasise community and collaboration as part of musicians' learning (D. Bennett, 2008; Gaunt & Dobson, 2014). This literature provides a foundational argument for examining learning in context, that is, for investigating orchestral musicians' learning through the situatedness of their understanding and their access to participation in the group's activities.

CoP theories are often contested around ambiguities in how participation and conflict can occur in communities (Hodges, 1998), and care is required in applying it to orchestral practices so that musicians' personal contributions to shared knowledge are not underplayed. Critiques of the theory argue that participation in practice is shaped more by conflict and contest (Fuller et al., 2005), whereas common uses of the theory frequently assume that "consensus and continuity are assured" as individuals work towards "full" membership (Contu & Willmott, 2003, p. 292). Other evaluations of CoP theories maintain that they do

not sufficiently account for ambiguities in concepts such as communities (Cox, 2005), participation (Fuller et al., 2005), and individual agency (Kakavelakis & Edwards, 2011). Despite its continued use and reification into a model for organisational practice, CoP theory was never intended to be used as such and it is important to differentiate between its theoretical, explanatory use and its ability to describe “good” practices (Gherardi, 2009; Lave, 2008). Orchestral musicians can be part of multiple fragmented communities across instrumental sections and hierarchies, and considerations of whether their participation as members is “peripheral” or “full” may not adequately contribute to comprehending lifelong learning in the orchestral context (Hager & Johnsson, 2009). An investigation of shared practices and knowledges in an orchestra needs to consider the conflicts and contesting of practices and values as well as identifiable shared performance goals. In this way, individual musicians’ agency and unique personal-historical knowledge becomes part of the acknowledged contributions to the performance of the group.

The personal knowledges, agency, and subjectivity that individual musicians bring to and reconstitute through their engagement in orchestral work are connected to cultural systems through their concrete instances of participation. It has been argued that to explain the interdependence between individuals’ subjectivities as they engaged in a practice, the medium of their interaction needs to be theorised (Somerville, 2005). Culture – languages, practices, dispositions, and understandings shared between people – serves as the interface for the contesting and negotiation of subjectivities and practice, existing between individuals and the unique uses of those actions (Scribner, 1985; Valsiner, 2000). Through the reconstitution of subjectivities, individuals’ learning and development can be seen as a transformation of knowledges and, crucially, participation in sociocultural activity (Rogoff, 2003). For this inquiry, the concepts of subjectivity and agency elaborated above suggest that culture as a medium of communication and negotiation is vital to comprehending how learning processes form part of musicians’ participation in orchestral performance.

Concepts of subjectivity and agency are considered here to be important to investigating learning, as they illustrate how orchestral musicians’ knowledge can change through their personal reconstitution of understanding and their negotiation of shared practices. The changes in understanding that occur as individuals engage in agentic actions within social practices suggest that musicians learn as they share in the co-constitution of orchestral performance. Further to this, it is important to investigate the interaction between the microgenetic learning processes arising from day-to-day coparticipation in orchestral performance and the ontogenetic development of musicians’ abilities and practices over

longer periods of their careers. The embodied aspects of musicians' performance knowledge, such as their personal history of experience and sensory awareness, affect the enactment and development of their procedural knowledge in orchestral performance. Thus, a focus on musicians' participatory activity is important for comprehending their situated knowledges and the historical-experiential and bodily awareness aspects of development. The conceptions of subjectivity and agency employed here suggest an examination of how learning arises through participation in the cultural practices experienced in particular orchestral contexts.

Culture and Interaction

This section examines the notions of culture and interaction raised within workplace learning and music performance literature to illustrate their explanatory value to this investigation. The word "culture" has been used to capture a range of competing concepts, and debates about its meaning and usefulness have been ongoing since the beginning of the 20th century. The arguments about subjectivity, agency, and the constitution of personal experience put forward in this chapter suggest that it is necessary to examine the cultural mediations that professional orchestral musicians use as they participate in performance together. The medium of this interaction is crucial to how doing and thinking and, hence, learning occurs within the orchestral context. The fields of anthropology, ethnography, and cultural studies contribute concepts of culture that are useful to illustrating how practices, meanings, and values can be co-constituted amongst members of an orchestra. Learning and development are identified within the social negotiation of and individual actions towards cultural practices, as such engagement can involve constraints on knowledge and actions as well as their agentic reconstitution. The interdependency between individual agencies and the heterogenous agencies of the group within cultural practices point to intersubjectivity as an important concept for understanding interaction and learning through participation.

There are multiple definitions of culture across academic discourses, but even the most limited of those definitions implies the importance of individual agency to the continuation of cultural practices. Early work in an emergent field of cultural studies described culture as "the whole way of life" of a social group (Barker, 2002, 2003; T. Bennett, 1998; Grossberg et al., 1992; Hall, 1997; Hall et al., 1980; McGuigan, 2006; Williams, 1981), and similar conceptions can be found in anthropological ethnography (Atkinson et al., 2007; Clifford & Marcus, 1986). An example of this conception is a description of culture as "what people do, what people know and the things people make and

use” (Spradley, 1980, p. 5). Spradley bases this definition on Blumer’s three premises of culture to demonstrate its importance to the processes of living and acting in social contexts:

1. Human beings act towards things on the basis of the meanings that the things have for them.
2. Meaning of such things is derived from, or arises out of, the social interaction that one has with one’s fellows.
3. Meanings are handled in, and modified through, an interpretive process used by the person dealing with the thing he encounters. (Blumer, 1969)

This set of conditions identifies culture as primarily concerned with the negotiation and communication of meaning. A “shared system of meanings” (Spradley, 1980) takes form as people engage in negotiation and reflection, but it also shapes and directs people’s actions and attitudes as well. In this conception of culture, the constraints that “things” place on individuals are acknowledged through the social negotiation of their meanings and uses, but it also argues that individual agency is still crucial to such interactions.

To consider orchestral performance using this conception of culture, similar possibilities for constraint and agency appear to apply within musicians’ actions and interactions. Using Spradley’s (1980) definition, the cultural “things” of an orchestra could include the instruments and sheet music, the sounds and actions produced by the musicians and their audiences, and the musicians’ knowledges and attitudes towards performances, performers, and musical concepts. Cottrell’s (2004) description of musicians’ relationships to instrumental sound quality provides an illustration of how these “things” form part of interactions and the negotiation of meaning. Musicians utilise ideas about sound quality in the formation of their identities as players and listeners. This carries the underlying assumptions that sound is capable of conveying musical ideas, that it is unique to individuals, and that everyone should strive to find “their” exclusive sound. Notwithstanding that it can be considered individual musicians’ “property”, physical sound qualities and the musicians’ understandings of them are formed in society with others. Social interactions regarding sound, verbal as well as through performance, include how musicians can use sound to invite partisanship and engage in establishing allegiances to a particular school, nationality, musical style, or ethos (e.g., among performers of early music) (Cottrell, 2004). This example demonstrates how musicians can experience constraints in their interaction with orchestral culture, as they are not able to choose whether to concern themselves with sound quality and the orchestral communities’ discourses around it, as it is an expected part of that culture.

However, their interactions regarding the meaning of sound quality involve musicians' agentic actions that transform understandings of both musical concepts and self.

Learning can be located amongst the constraining elements, agency, and transformation of understanding in this conception of culture. In his seminal work examining the cultural and social aspects of musical practice, Merriam (1964) describes learning as the gradual and infinite process of interacting with and enacting an "external" culture. He illustrates his point by drawing on the anthropological work of Gillin (1948), who enumerated four descriptive principles for the sharing of human practices within a group: (a) Culture provides the conditions for learning; (b) it systematically elicits appropriate responses; (c) through its products or agents, it provides reinforcement; and (d) the culture of a society, therefore, has self-perpetuating tendencies. The latter three principles appear to support the statement in the first, in that they point to how a society's practices interact with individuals' practices and these means of enacting change are aligned with learning processes. Gillin (1948) describes how shared culture offers ways of doing things to individuals and also asks for their compliance. Culture is discursive here, in that its tools and the people who use and make them are effectively limiting what activities or ideas are acceptable. As individuals continue to take part in common activities, their actions are embedded within the cultural system. Hence, culture is composed of some stable (although not permanent) elements but is never identical from moment to moment, as the continued activities rebuild the culture anew. This conception views culture as a total picture of a social interaction, through the continual reconstitution, or transformation, of individuals' practice and awareness.

This relationship between interaction and individuals' changing awareness emphasises that orchestral musicians' communication with each other affects how they learn through their work. Orchestral musicians engage in various combinations of social and musical interactions in and around rehearsal and performance activities (Dobson & Gaunt, 2013; Hager & Johnsson, 2009). Further to the playing-focused list of cultural "things" in an orchestra, cultural interactions may also include the social and musical communications that surround interpersonal power relationships, politics, personalities, stories, myths, and jokes within the orchestral context. Becoming part of an orchestra involves understanding appropriate responses: Newcomers must discern and embody the "acceptable protocols" of how and when to act, speak, be casual, or demonstrate seriousness (Johnsson & Hager, 2008). Reinforcements to these protocols are provided through comments, critiques, and reactions amongst colleagues, and even through decisions about offers of permanent or continued

casual employment (Khodyakov, 2007). In these ways, individuals' social environments and experiences affect their future behaviour and expectations, and their enactment of orchestral protocols is part of their participation in social understanding and control (Dewey, 1938). Thus, musicians' participation in the social and musical communication of an orchestra points to development in their understanding and practices.

The conceptions of culture mentioned above are hotly debated in later cultural studies literature because of their tendency to reify things, languages, and meanings into an existence independent of people and their subjective understandings. Some contemporary cultural theorists (Barker, 2003; McGuigan, 2006) acknowledge that the conception of culture as "things done, known, made or used" has democratised the term "culture" by recognising that it has different meanings and uses for everyone. However, they argue that confining the concept to this definition, or even purely within language structures, puts researchers in danger of painting both culture and communities as self-sufficing and materially distinct. Instead, emphasis is placed on a more transient and contingent conception of culture, in which communities and their ideas are constantly mixing and separating in "constellations of temporary coherence" (Massey, 1998, p. 125). This conception positions culture as consisting of "overlapping performative flows" (Barker, 2002, p. 16) rather than as a set of stable objects. To take a hypothetical instance of orchestral culture that contextualises Barker's point, in the first movement of Schubert's *Symphony no. 8 in b minor (Unfinished)*, the clarinet and oboe play the initial theme in unison. The physical act of playing it must be negotiated and worked out during rehearsal and performance by the two musicians involved. Even if they achieve a more or less similar and stable performance by the end of the week's rehearsals, that performance is not constituted as the same cultural knowledge for both musicians. Instead, it is likely to be understood differently by each of them, mediated by their different personal playing histories, different instruments, and even their respective spatial positioning within the orchestra (Seltzer, 1975). This example illustrates that orchestral cultural practices do not necessarily have a material existence in the instruments, musical notation, or individual musicians' skills or knowledge of the piece. Rather, cultural practices reside amongst the musicians' understanding and learning processes as they are constituted and reconstituted through coparticipation, that is, individuals' collective engagement in those practices and affordances.

To summarise this conceptualisation of culture and learning so far, orchestral musicians' negotiations of meaning, participation, and agentic action in performance are a crucial part of their ontogenetic development (Merriam, 1964). Culture can be considered as

a shared system of meanings that are negotiated through artefacts, languages, and knowledges (Barker, 2002; Spradley, 1980). This conception indicates how individual musicians constitute understanding and agency within orchestral practices. Through negotiating and contesting practices, the mutual co-constitution of understanding is connected to musicians' development (Cottrell, 2004). Culturally bound understanding and learning, however, should not be regarded as residing in materially distinct concepts of individual musicians' skills. Rather, it is constituted and reconstituted through their coparticipation (Billett, 2002b; Johnsson & Hager, 2008).

The idea that culture is thus heterogeneously co-constituted is echoed in some of the ethnographic studies that have been carried out in musical communities. For example, Kingsbury (1988), in his ethnography of a music conservatory, describes both the conservatory (i.e., the institution) and music (i.e., the practice) as "open cultural systems". This term implies that they are enacted through the agency of the people who engage in concomitant activities, and that culture is a heterogeneous, ever-changing association of many people's systems of thinking. He observed that "a music conservatory is a place where disagreements are continually being negotiated towards consensus, and where consensus in turn is continually breaking up into contention" (p. 17). This statement contrasts somewhat with the observation by Cottrell (2004), regarding professional musicians, that the solution of problems or disagreements in performance is more usually followed by the musicians turning their attention to other performance problems or difficulties. However, both accounts of the negotiation of practice suggest that single institutions, such as individual orchestras, are not the closed, unchanging cultures that their closely controlled social membership might imply. Rather, a study of group practices must account for disagreement as well as agreement, in which individuals contest ideas and practices and agentially vie for influence over the *what* and *how* of that cultural system. It is important, then, to be able to describe and explain the divergence of musical practice within instrumental sections, or disputes and debates between colleagues that may or may not be resolved. This is because orchestral culture is made up of disputed meanings and practices as well as those that are agreed and accepted.

Musicians participating in the orchestral workforce are themselves the means of continuing, controlling, and adapting the definitions of who they are and what they do, often through argument as well as agreement. Terms such as "work" and "professional" signify different things, values, and dispositions to people at different times in their careers, or even between musicians who play different instruments (Cottrell, 2004). For similar reasons, the definition of a musical community (or orchestral community) can be difficult to determine,

although it can be demonstrated by specific activities at particular points in time. At best, it may even be a term of convenience, an idea that aligns with Bourdieu's concept of a community as existing in a *potential* sense (Bourdieu, 1998). The high artistic and social value generally accorded to orchestras within wider society and within the music industry provides an example, as it is experienced in different ways according to how individuals are disposed towards its activities. Being associated with a professional orchestra may be regarded as socially, economically, and artistically valuable to some musicians, whilst it may also represent solo career disappointments or artistic stagnation to others (Cottrell, 2004; Westby, 1960). When musicians of differing dispositions participate together in orchestral activities, it does not automatically imply a consensus, but it is highly likely that negotiations of the value and meaning of orchestral practices will arise through their coparticipation. In this respect, intersubjective and agentic processes of creating, maintaining, and recreating meaning are part of these aspects of cultural systems: "Musical texts become sites through which social relationships are negotiated" (Cottrell, 2004, p. 91). In other words, it is rarely as simple as "just playing the music", as musicians often put it. The social processes of forming or using identity and community and the enactment of power relationships are always involved in the complex activity of making music together.

Musicians' participation in the negotiation of orchestral cultural practices is the common element between their learning processes and their exercise of individual agency. Cottrell (2004) found that musicians often make judgements about others' creativity and musicality by focusing on what they perceive to be agency, or individual manifestations of intentionality in performance. However, both of these qualities are "earned rather than learned" (p. 33); that is, they are socially ascribed qualities that reflect the observers' tastes. In contrast, Cottrell (2004) distinguished *musicianship* as the learned craft of performance, in which intentionality is still important but, crucially, is experienced only through participating in and enacting musical behaviour. He connects this participation to musicians' understandings of "being" a musician, an idea also expressed by the proposition that action is integral to being (Sennett, 2008). Sennett argues further that no action is without agency, that the image of the structural dupe, the node in the network, or the passive recipient of cultural activity does not account for the thinking agent behind every action. Agency, subjectivity, and learning intersect here, in that understanding musical culture and participating in musical culture are maintained to be part of the same process (Blacking, 1973).

Just as individual musicians' agentic activity is related to their learning and understanding in orchestral performance, so is there a similar relationship between

individuals' learning and the social agencies inherent in coparticipation. Individual and social agencies are argued to be relationally interdependent (Billett, 2006); that is, individuals' enactment of their intentionalities and the social agencies of the group mutually affect one another. Thus, through coparticipation in orchestral culture, the interaction between individual and social agencies makes a central contribution to musicians' development (Billett, 2002b). This is evident, for example, in how the contributions of individual musicians can affect the variable quality of ensemble performances. In an ethnography of Javanese gamelan performance, Brinner (1995) focuses on the development of "competencies" in musical behaviour and found that participating in musical action and enacting these competencies almost always involved interaction with others:

As individuals making music together, we notice, exhibit, and often exploit our different abilities and degrees of knowledge. As human beings being musical together, we can rarely ignore the personalities of the other members of the ensemble because, among other things, personalities are directly linked to issues of authority concerning the right or the power to influence or command the musical conduct of the ensemble and its individual members. (p. 285)

Even if they are reacting to the guessed-at opinions of colleagues or their imagined ideas of what teachers long since passed would say (Trusheim, 1991), musicians are always contesting meaning when they are engaging in their practice. Both individual musicians' agentic involvement in the negotiations of practice and the agencies that arise from interactions with others shape their performance, as well as the learning and understanding that are part of it.

As proposed above, interaction between musicians is greatly influential in shaping both microgenetic and ontogenetic development within orchestral performance, in that musicians' understandings are mutually interdependent among themselves as they enact their performance knowledge together. This is likely to be as true in symphony orchestras as it is in gamelan. However, there are significant contextual differences between the two ensemble types that might produce very different constraints on learning processes. For instance, gamelan orchestras are often constituted from a mixture of experienced and inexperienced members who, in time, may change their instruments and greatly alter their positions within the musical and social hierarchies (Brinner, 1995). Symphony orchestras, on the other hand, have a very specific pathway for entering the "field" as a permanent member, whereby musicians are expected to know and perform their one role in an expert manner from their first day of work (Seltzer, 1975). This situation, combined with a musical and social

hierarchy that almost never changes, provides a very different social context for interaction: Different notions of professionalism and employment, along with the constraints of who is able to interact with whom (arising from the musical content and spatial arrangements), all have their impact on how professional symphony orchestra members engage in and learn through their coproduction of musical practice. Participation in musical culture, then, is both agentic and interdependent among the multiple agencies operating within a musical discourse.

The conceptualisation of culture outlined here proposes that orchestral musicians' understandings and practices are co-constituted through their shared participation in those practices. This orchestral culture is composed of contested as well as agreed practices and meanings. Participating in the social interactions of contesting and finding shared ways of doing things involves agentic, subjective, and developmental processes for individual musicians. The social agencies that arise from the orchestra's coparticipation also affect musicians' developmental processes through their engagement in orchestral culture. The topic of interdependence has arisen frequently throughout the discussions of subjectivities, agency, and culture, and the next section addresses this by discussing intersubjectivity and its implications for learning.

Intersubjectivity

As individuals' subjectivity and agency are connected to their learning and development, their coparticipation in cultural practices is a crucial site of these processes (Billett, 2002b; Rogoff, 1990). Thus, intersubjectivity is identified here as a key concept in understanding the links between doing and learning in professional orchestral performance. Intersubjectivity is the mutual constitution of subjectivities as individuals engage in activities together, that is, their shared understandings of self and activity that arise through acting together. This concept is used in sociocultural theories of learning to bring together individuals' psychological experiences and actions with social interactions and specific cultural circumstances to demonstrate how knowledge can be shared and transformed within group practices. Using this conceptualisation, orchestral musicians who engage together in shared performance practices are negotiating, acting, and thinking whilst using individual experiences as well as their social and musical interactions. Understanding the intersubjectivity that arises from this engagement is proposed here to further comprehend musicians' learning processes as they form part of their coparticipation in orchestral practices.

Theories of subjectivity propose that individuals engage with consciousness by exploring, thinking about, and inhabiting different ideas of self-concept (Mansfield, 2000), and these experiences arise interdependently within societies through co-action (Giddens, 1984). It is also proposed by those theories that it is interaction with “otherness” (Foucault, 1988; Mansfield, 2000) that allows the individual to construe shape to what constitutes “self” and “other”. This is not in a permanently true appraisal of an objective reality, but a constantly shifting reconstitution. Put another way, the self and the world are constructed through interrelated and reciprocal processes of reconstituting understanding. Feminist theories of subjectivity provide an account of how subjectivity acts on and is acted upon by the world (Haraway, 1992; Lengermann & Niebrugge-Brantley, 2001; McLaren, 1960). For example, discrepancies between individuals’ understanding of their own social roles and the different understandings expressed by others can provide the motivation for engaging in the negotiation of those roles. It is advanced here that this is a constant process both shaped by and shapes the understandings of all involved. Subjectivity, then, whilst having implications for personal experience and action, is constituted intersubjectively.

In an orchestra, musicians’ concepts of self are often handled through their interactions with their colleagues as they engage together in orchestral performance. Through their individual experiences, musicians develop particular understandings of what it means to be a musician or to work in an orchestra (D. Bennett, 2008; Cottrell, 2004). Their subjectivities arise from forming relationships between their sense of self and those understandings of being and doing as a musician. However, this understanding of self occurs within the sociocultural context of an orchestra and engaging in communal orchestral performance. Negotiations of how orchestral practices are enacted and what those practices should be are a constant part of shared musical performance (Brinner, 1995; Murnighan & Conlon, 1991). Through this agentic negotiation of orchestral practices, musicians’ self-concepts can be challenged and transformed intersubjectively.

Because subjectivity is a product of interdependent relationships, the exercise of agency and power is involved in its creation (Foucault, 1994), although the individual and social contributions to power are debated. Foucault described power as residing in “an action upon an action” (1994, p. 340), or the action of defining and structuring the possibilities of other actions. This statement suggests that personal agency is important to the existence of intersubjective processes. Within pragmatic philosophy, agency is sometimes regarded as being interdependent with the experienced reality; that is, experiencing the world is not a one-way process, but involves agentially taking part and shaping personal constitutions of

reality (Dewey, 1938; Emirbayer & Mische, 1998; Mead, 1934). Personal agency has been characterised as having a relational interdependence with social agencies (Billett, 2006), described so to demonstrate and privilege the dynamic interaction between the psychological and social contributions to human understanding. Thus, whilst intersubjectivity is recognised as an important aspect of both subjectivity and agency, tensions remain surrounding the ability to theorise both personal and social aspects into a coherent form.

In social theory, the individual and the society are commonly set up in opposition to one another and represented as irreconcilable units of analysis for human functioning (Elias, 2001). They are subsequently often aligned with further “opposites” – mind versus world; psychology versus sociology; emic versus etic; European versus North American, and so on. The theorisation of subjectivity is no exception, and its associated literature commonly construes agency and structural relationships as similarly vying for dominance as the sole explanatory measure of the self (Mansfield, 2000; Newton, 1998). However, it is increasingly understood that defining either “the individual” or “the society” as having an isolated, independent existence is problematic. This is because those very theories of subjectivity contend that it is not the opposition of the two that defines them, but their co-emergence and interaction. This is clearly the case in orchestral performance, as orchestras do not have an existence independent of individual musicians and their practices, and orchestral musicians’ subjectivities draw on their association and engagement with orchestras. Dewey was insistent on refuting the “either/or” approach to theoretical problems, arguing that those construals are not useful for the positive construction of knowledge because they are framed on negative values. These dichotomies are reliant on negation of the “opposite other” and consequently don’t admit of the need for considering all angles (Dewey, 1938; Prawat, 1998). Thus, it is important that in utilising concepts of intersubjectivity or agency to examine orchestral practices, neither the individual musicians’ contributions nor the sociocultural contexts of those practices are privileged to the exclusion of the other.

Intersubjectivity has been theorised as an important part of learning within the field of sociocultural development, influenced by the work of Vygotsky (Rogoff, 1990, 2003; Valsiner & Rosa, 2007a; Valsiner & Van de Veer, 2000; Van de Veer, 1994; Vygotsky, 1978; Wertsch, 1985; Wertsch et al., 1995). In this discourse, learning is conceptualised as both inter-personal and, at the same time, intra-personal, being a “kind of action” to be carried out by mastering social processes (Wertsch & Tulviste, 1992). Most notably from this theory, the “zone of proximal development” represents that “area” between what is possible for an individual to enact alone and what they are capable of thinking or doing in

collaboration with others (Rogoff, 1990). Furthermore, as agency plays an active role in learning here, this theory formulates “human mental functioning” as “the result of individuals’ participation in concrete social interaction and their employment of concrete tools” (Van de Veer, 1994, p. 118). In other words, thinking and learning are connected to the individual agency evinced by engaging with social activity and appropriating cultural material.

Within the study of music performance there has been emerging success in building this kind of contextualised understanding to elucidate concepts of interdependence in music performance. This work includes psychological studies of interpersonal effects in education (Barrett, 2011; Creech & Hallam, 2011; Gaunt & Westerlund, 2013; Green, 2002) and performance (Dobson & Gaunt, 2013; Hargreaves & North, 1997; North & Hargreaves, 2008). They draw together disparate fields of research and recontextualise older traditions of empirical studies of music into concepts that recognise the importance of both social and personal contributions to learning. These sources often still reflect the legacies and preoccupations of developmental and cognitive psychology. However, they are opening those paradigms up to incorporating interpersonal perspectives and re-forming a general understanding of what is possible in music performance research. This literature provides the motivation for continuing the development of a conceptual framework for understanding the intersubjective aspects of participating and learning in orchestras.

An investigation of learning in professional orchestras is proposed here to involve understanding musicians’ intersubjectivity and participation. Concepts of interpersonal subjectivity and agency are identified as crucial phenomena in research into learning, as they shift the focus from regarding skills and abilities as things in themselves to the interpersonal activities and situations that contribute to the co-emergence of knowledge (Billett et al., 2006; Eteläpelto et al., 2013; Fenwick, 2006). The perspective of intersubjectivity, or interpersonal engagement and co-constitution of cultural practices, is here applied to the study of learning within a professional orchestral workplace. This is approached through a study of personal understandings of activity and negotiation. It also includes the patterns of communication and power-relationships that affect negotiation and meaning-making amongst the orchestral group. Enacting such an inquiry comprises examining and explaining the interdependent ways that people come to contest, find agreement, construe, and practise the art of orchestral performance. These form part of the key bases for investigating musicians’ learning and development within orchestral performance.

As part of the conceptual background for this project, intersubjectivity is understood to arise as individual musicians engage in their work and develop understandings of orchestral practice together. Debate surrounds the agentic roles of social and individual contributions to intersubjectivity. However, neither the social and musical structures of the orchestra nor the individual musicians' discrete actions should be privileged in an explanation of their intersubjective engagement in orchestral practices. Theories of sociocultural development contend that learning is constituted within the changes in understanding and practice that individuals experience as they act within and through social processes. Accordingly, comprehending musical performance and learning requires incorporation of personal, interpersonal, and sociocultural perspectives. This requirement warrants an investigation of how orchestral musicians learn as they engage in contesting and constituting orchestral practices together.

Basis for Investigating Learning in Professional Orchestras

To address the needs and concerns of the orchestral performance community in understanding orchestral work, this chapter details a conceptual framework for comprehending learning in the orchestral context. Musicians' subjectivities, or understandings of self and activity, shape their performance knowledge. So, too, does their agentic enactment of intentionalities within their orchestral practices, and thus both concepts are connected to developmental processes of that performance knowledge. Learning is identified with the moment-to-moment, microgenetic processes of changing practices and understandings, whilst development is considered within the longer term, ontogenetic processes of changes in performance knowledge and capabilities. Musicians' knowledges are co-constituted within and through participation in the practices of orchestral culture, consisting of contested as well as agreed practices and meanings. As musicians participate together in orchestral cultural practices, their actions, meanings, and changing understandings of performance are constituted intersubjectively amongst the orchestra. The previous chapter identified the problem of comprehending the processes and consequences of working and learning in a professional orchestra. The conceptual background expanded upon in this chapter proposes to address this problem by framing the research question thus: How does intersubjectivity arise as professional orchestral musicians engage together in and learn through their work? This question directs the investigation of acting and learning within orchestral practices through examining the musicians' coparticipation in and co-constitution

of those practices, that is, it focuses on what they do and how learning forms part of their activities.

The concepts elaborated upon in this chapter reveal the connections between doing, thinking, and learning within a social context, and so investigating orchestral performance together with learning is important for understanding what professional orchestral musicians do and how they do it. For those in the orchestral performance and education community, it is important to develop a broadly contextualised understanding of how orchestral musicians perform and learn as they engage in their work together. The aspects of orchestral performance that relate to the concepts of culture, intersubjectivity, and agency explained here are also significant for orchestral organisations in considering workplace relations through positive and productive practices and recruitment. This study into the processes of musicians learning to work in orchestral situations aims to inform all parties about what such learning entails, and also to refocus common understanding so that conflicts and problems can be recognised and addressed in everyday orchestral practice. The concepts of subjectivity and agency inform the explanation of learning processes through the connection of doing and thinking as musicians participate in orchestral work. It is maintained that learning and developmental processes interact, in that individuals' larger developmental trajectories influence their day-to-day negotiations of practice, and the immediate changes that are part of those negotiations contribute to longer term habits of engagement.

Understanding orchestral performance entails investigating musicians' learning as they engage in the co-constitution of orchestral practices. In the previous chapter, it was established that orchestral musicians can face challenges to their well-being and the sustainability of their performance activities that come about through the complex psychological, sociocultural, and physical demands of their work. To address these challenges, it was proposed that musicians' learning and development needs to be understood in context with their participation in orchestral performance. This chapter outlines concepts of agency, culture, and intersubjectivity that describe how orchestral musicians' doing and learning are interrelated through their coparticipation. It identifies learning and development with the changes in practice and knowledge that arise interdependently as musicians find shared ways of performing. Thus, to address the problem of understanding musicians' interrelated performance and development, it is proposed to focus this inquiry on how intersubjectivity arises as professional orchestral musicians engage together in and learn through their work. The following chapter describes the methodology and procedures designed to investigate and respond to this question.

Chapter 4: Investigating Orchestral Musicians' Coparticipation and Learning

This chapter describes and justifies the choice of methodology and procedures adopted to investigate how intersubjectivity arises as professional orchestral musicians engage together in and learn through their work. In the previous two chapters, understanding professional orchestral performance is argued to require investigation of the musicians' learning and development. Using a sociocultural conceptual framework, the processes leading to intersubjectivity (i.e., shared understanding) comprise the interpersonal sharing and negotiation of meaning and activity. This concept is identified as an appropriate focus for exploring the intersection between orchestral performance and learning processes. This fourth chapter sets out the epistemological basis for the investigation's methodology as well as details of the sensory ethnography that was undertaken. It also describes the procedural details of participant recruitment, data collection, analysis, and the presentation of findings within Chapters 5 and 6 of this dissertation.

The first part of this chapter elaborates the epistemological basis for how orchestral performance, musicians' performance knowledge, and learning and development are conceptualised together. In particular, it focuses on the concepts of subjectivity, agency, culture, and intersubjectivity identified by sociocultural perspectives as important to investigating learning and development. An ethnographic approach was adopted to illuminate these aspects of orchestral performance and learning, and its suitability for this task is set out in this chapter. Sensory ethnography, the methodology adapted for this investigation, is then elaborated, explaining the connections between intersubjectivity and individuals' embodied, multisensory experience. This methodology makes use of my own sensory engagement with the environment and interactions of the orchestra, generating unique perspectives on the participants' sense-making and sensory engagement. It is explained here how sensory experience, influenced by personal and interpersonal factors, is understood to contribute to the making and remaking of individuals' procedural knowledge.

The second part of this chapter outlines the procedural details of the research process. Specific aspects of methodological rigour and ethical conduct considered during this research are set out. Participant recruitment and data collection procedures are also described, including how observation and interview techniques were designed and implemented. Analytical procedures are then outlined, explaining how the various thematic and content

analyses lead to the production of an ethnographic account, presented in Chapters 5 and 6, that addresses the sociocultural aspects of the inquiry.

Epistemology and Methodology

The challenges of professional orchestral performance and the responding conceptualisations of subjectivity and agency, discussed in Chapters 2 and 3, present musicians' performance knowledge and learning as part of the same process of constituting and reconstituting experienced reality. Subjectivity, or understandings of self and the world that arise through activity, entails a concept of human understanding that is created through and exists within the processes of consciousness (Harteis et al., 2006). So, individuals' moment-to-moment engagement with the world around them involves the continuous making and remaking of meanings. Agency is also a part of this conception of understanding, in that individuals act through and influence their surroundings as well as their own perceptions of themselves and the world (Kakavelakis & Edwards, 2011). These conceptualisations imply that knowledge is constantly being recreated and reshaped with each new moment of experience and activity and is consequently subject to a continuous process of development. In the context of orchestral practices, then, musicians' historical and immediate experiences and actions contribute to the constant remaking of their performance knowledge, and so their learning and engagement in orchestral practices are considered part of this process.

Orchestral musicians' coincident knowledge and learning are taken to be embodied, but in a way that privileges the changing over the static. In music performance, much of what is known is regarded as unable to be put into words, such as the nuances of listening to and creating sound, or the understanding of space, movement, and physical sensation that is intricately connected to playing an instrument (Dobson & Gaunt, 2013). These "unspoken" and "spoken" knowledges can be distinguished in a few ways, for example, procedural knowledge and declarative knowledge; reflection-in-action and reflection-on-action; "knowing how" and "knowing that" (Stubley, 1992). Musicians' procedural knowledge of performing in orchestras, constituted through their experiences and including their bodily sensoria, is regarded here as embodied in the same dynamic and changing sense that the experience itself exists (Downey, 2010). Thus, embodied subjectivities and agencies (Somerville, 2006) are considered to have an important influence on how procedural knowledge and learning are constituted and reconstituted within musicians' engagement in orchestral practices.

Through musicians' experiential and participatory connection to their orchestral cultural context, their performance knowledge and learning are also regarded as situated. Theorising culture into subjective and agentic processes is important for understanding contextual influences on learning as individuals engage in contesting and negotiating shared practices within a group (Somerville, 2005). The concept of situated-ness connects individuals, their knowledge, and learning processes with their agentic engagement in their environment and socially shared culture (Kakavelakis & Edwards, 2011; Lave & Wenger, 1991). Even so-called "abstract knowledge", as it is encountered or discussed amongst people, has a situated context in which it is constituted by its practitioners. Participation in cultural practices, through embodied experience that is contingent on engaging with the world, is a key element of the situated-ness of knowledge and learning (Fors et al., 2013). Musicians' understanding and engagement in orchestral practices is considered here to be situated within the orchestral culture through which it is experienced and practised.

Further, through being situated within musicians' engagement in orchestral cultural practices, their knowledge and learning in orchestral performance is intersubjectively co-constituted through their engagement together in their work. Intersubjectivity is the interdependent understandings of self and the world that arise amongst people as they act together, their agentic interactions being crucial to the continued co-constitution of their shared knowledge and practices (Valsiner & Rosa, 2007b). This view is consistent with sociocultural conceptions of knowledge and development, as influenced by the work of Vygotsky, that formulate "human mental functioning" as "the result of the individuals' participation in concrete social interactions and their employment of concrete tools" (Van de Veer, 1994, p. 118). The verb "construct" is commonly used to describe how humans represent their own knowledge or perception of an external world to themselves (Stubley, 1992). However, it may inappropriately connote a prior "building" of knowledge of the world that can then be lived in, with implications of reification or permanence (Ingold, 2011). Instead, the term *constitute* is employed here to convey an epistemology in which knowledge arises through and within individuals' continuous engagement and interaction with the world. The methodological traditions used or adapted in this study commonly refer to their epistemological position as constructivist. Nevertheless, no conflict is perceived here as both construction and constitution refer to a pragmatic conception of knowledge as arising through situated perception and experience (Stubley, 1992). Thus, as orchestral musicians interact with one another through engagement in their collective work, their knowledge and learning are considered to be co-constituted through their shared participation.

The conceptual framework around subjectivity, agency, culture, and intersubjectivity elaborated in Chapter 3 provides an epistemological basis, explored in this section, for describing orchestral musicians' knowledge and learning. Engaging in orchestral work involves musicians' subjectivities and agencies, bringing their historical and immediate experience to combine acting and learning in their moment-to-moment recreation of meaning and practice (Ezzy, 1997; Valsiner & Van de Veer, 2000). The knowledge that arises from this engagement in orchestral practices can be described as procedural and is embodied through sensory experience and participation. Musicians' knowledge and learning here is considered to be situated, as it is enacted within the context of their interactions in orchestral culture, that is, their constantly negotiated system of meanings, languages and practices (Chaiklin & Lave, 1993; Kakavelakis & Edwards, 2011). Through this interaction, musicians' knowledge and learning is intersubjectively co-constituted amongst the orchestra as they participate together in shared practices. The next section explains the ethnographic methodology adapted for investigating this conceptualisation of knowledge and learning in a professional orchestral context.

Ethnographic methodology.

The conceptual background of this study draws on sociocultural ideas of knowledge and learning, calling for an exploration of how professional orchestral musicians learn through their work, and an ethnographic methodology was selected and adapted to suit this aim. Ethnography, in the context of this inquiry, is considered to be an empirical and inductive exploration within a culture using observation and interaction (Atkinson, 1990; Atkinson et al., 2001; Atkinson et al., 2007; Clifford & Marcus, 1986; Denzin, 1997; Fetterman, 1989; Geertz, 1973; Spradley, 1980; Willis, 2007). The ethnographic procedures utilised for this study were designed to identify the interdependent learning of orchestra members by integrating the musicians' personal understandings of playing, self, and negotiation of orchestral culture with observed patterns of action, communication, and power relationships. These procedures are used to produce an account of the knowledge of individuals, society, and culture within an orchestral context. Its aim is that the account is "as loyal as possible to the contexts, negotiations and intersubjectivities through which the knowledge was created" (Pink, 2009, p. 8). The data produced by ethnography yield rich and substantial information about what people do, how they understand things, and how those experiences affect and are affected by their context. Hence, the ethnographic approach to recreating faithful accounts of intersubjective cultural engagement (Atkinson, 1990; Casey,

1992) is considered suitable to investigating musicians' experiences and understandings in the context of orchestral culture and coparticipation, that is, the interaction between their agency and the affordances in their environment (Billett, 2002b).

An ethnographic approach responds to the conceptual and epistemological background of the research question, which asks how intersubjectivity arises as professional orchestral musicians engage in and learn through their work. Given its person and situational dependency, intersubjectivity is a concept that requires a wide latitude for interpretation during data collection, analysis and reporting, and is well suited to qualitative description. Ethnography is appropriated here to provide this flexible and qualitative approach for providing an interpretive account of the processes of playing in an orchestra, as well as the ability to critically examine cultural engagement and interaction. It is a naturalistic and culturally embedded approach (Denzin, 1997; Lincoln & Guba, 1985) to recounting the culturally-bound, co-emergent understanding of experiences and procedural knowledge. Accordingly, it responds to a conceptualisation of knowledge and learning as situated and co-constituted. It allows a focus on musicians' experiences of aural, visual, tactile, and cultural information that is simultaneously both the object of individuals' cognition and their intersubjective negotiation of practice. An ethnographic methodology answers to the research question by exploring the work of performing within the orchestra, what musicians do as they engage in their work with others, how they experience and understand it, and how those situated knowledges are mediated intersubjectively.

Ethnography has foundations in concepts of culture and interaction that enable an understanding of personal, interpersonal, and sociocultural aspects of orchestral performance. Because of its focus on the things that are said, done, known, or made by people, it can be said that ethnography "always implies a theory of culture" (Spradley, 1980), a reflection of its common association with anthropology. In this investigation, it integrates interpretive methods, such as interviewing to describe participants' understanding of culture, and critical methods, such as observing and reporting patterns of activity within the enactment of culture (Willis et al., 2010). In doing so, it produces a dialectic of emic and etic perspectives that does not reduce explanations to purely individual or social levels but allows development of description and theory important to investigating links between personal and social aspects of learning (Valsiner & Rosa, 2007b). Through addressing individuals' experiences and interactions, this approach can provide an account of how orchestral musicians' knowledge and learning is co-constituted within individual and social engagement.

An ethnographic approach is also considered suitable because its data-gathering procedures are responsive and adaptable to the real-world context of engaging in research with orchestral practitioners. It is common for ethnographic data collection procedures to be altered part-way through field work on the basis of new information or to refine the researcher's focus (Spradley, 1980). This adaptability also makes those procedures responsive to different research purposes. Ethnography is considered distinct from anthropology, although both utilise theories of culture, as it seeks to faithfully communicate a description of a people's current lives and experiences rather than speculate or make argument about their possibilities for the future (Ingold, 2017). Ethnographic intentions and the characteristic procedures of observation, interaction, and reflection are, thus, not beholden to an anthropological focus on culture (Pink, 2015). For example, its participant observational procedures can be turned towards social aspects of how musicians act within orchestral hierarchies and organisational processes. Interviews can also be focused on exploring psychological aspects of musicians' multisensory perception and engagement. This qualitative methodology was selected for the inquiry to fully explore individuals' experiences of engagement in orchestral work, and from which understandings could be drawn of the sociocultural and psychological processes that characterise performing and learning in a professional orchestra.

Ethnography can address both specific orchestral situations and interactions as well as general themes and concepts, such as learning or intersubjectivity, and this is important to making this research transparent and useful to individuals and organisations across the classical music industry. Ethnography is not "about" a particular place or group: it is "in" a place or group, that is, it studies specific occurrences, people, or interactions (Geertz, 1973). Such empirical study provides concrete material with which larger ideas of the discourse can be discussed relevantly and creatively. Observations of what people do together in an orchestra, the patterns of visual and sonic communication, and the ways that comments, jokes, and myths are used in daily activity all provide insight, through critical appraisal, of the sociocultural events that contribute to learning (Fetterman, 1989). Through interviews and other interactions between musicians and researchers, an avenue is provided to understand how personal interpretation, analysis, and justification are part of musicians' learning processes. Engaging in communication about ideas, physical practices, and sounds invites reflection on the shared understandings of orchestral performance. These are all instances of how the investigation of specific phenomena generates discussion and re-examination of the concepts relevant to this inquiry.

Five connections between the conceptual background of this study and ethnographic methodology that make it suitable for investigating learning in professional orchestras have been set out in this section. Firstly, as an empirical approach using observation and interaction, it can engage with orchestral practices to provide rich and faithful descriptions of musicians' interactions and experiences. Secondly, ethnographic procedures and the accounts they produce respond to the situated-ness of orchestral musicians' knowledge and learning through their focus on cultural practices. Thirdly, an ethnographic approach can be used to contextually integrate individual and social aspects of practice to generate an understanding of how musicians' knowledge and practices are intersubjectively co-constituted. Fourth, the methodology and its procedures are responsive and adaptable to the situations encountered within a sometimes unpredictable, real-world context, and can be utilised to explore personal, interpersonal, and sociocultural aspects of orchestral work. Finally, ethnography can also allow illustration and discussion of specific cultural events, as well as the more general concepts connected to them. To make the most of these strengths and to engage with orchestral musicians' multisensory participation and knowledge, the specific approach taken during the investigation is described here as a sensory ethnography.

Sensory ethnography.

The methodology adopted for this investigation is strongly influenced by the rationale and focus of sensory ethnography (Hurdley & Dicks, 2011; Mason & Davies, 2009; Pink, 2009, 2015; Sunderland et al., 2012). This is to engage as fully as possible with professional orchestral musicians' multifaceted sensory knowledges as part of their culturally mediated intersubjectivities. Sensory ethnography regards individuals' personal-historical and immediate experiences, as well as their knowledge and practice, to be constituted through their interconnected bodily senses. As part of the procedural knowledge of doing and being, the meanings and practices that arise from individuals' multisensory experience are culturally mediated, as are their understandings of the senses themselves (Pink, 2015). In the same way that intersubjectivities shift and change even as they mediate the shifting and changing of interaction, a "sensory culture" represents a moving target as it is equally subject to negotiation and reconstitution (Bull et al., 2006). Sensory ethnography uses adapted procedures that maximise the researcher's engagement with the multisensory understandings of participants, through focusing communication and interaction on sensory topics and utilising the researcher's own sensory experience and interaction. This is not an activity that involves merely isolating, listing, and analysing each sensory category individually; rather its

epistemology conceives of the senses as interconnected and sensory knowledge as being subject to social processes of co-constitution. As embodied sensory activity is so explicitly connected to orchestral performance (Dobson & Gaunt, 2013; Gaunt & Dobson, 2014), it is proposed here that it is important to place it at the centre of the account of musicians' knowledge and learning as they engage together in orchestral cultural practices.

The epistemology underpinning sensory ethnography not only contends that experience is constituted through interconnected senses, it also maintains that individuals' understanding and categorisation of the senses themselves are reconstituted through their culturally mediated use. While it is accepted that senses operate hierarchically in certain circumstances, there is a significant challenge to the assumption that one particular sense perpetually dominates understanding, for example, the assumption that European thinking is inherently visualistic (Howes, 2003; Pink, 2009). The challenge lies in the argument that language does not capture the total complexity of a person's experience, that is, "seeing" surroundings is not just cognising the spatial locations and physical attributes of objects (Ingold, 2011). Regardless of the implications of the word "see", understanding involves the use of culturally embodied, multisensory knowledge as well as experiential knowledge of affordance and the possibilities of interaction. Further, what constitutes a sensory category is culturally mediated, and the physical experiential understanding of a sense can change through how it is used (Howes, 2003). The notion that human senses are divided into the five categories of hearing, sight, smell, taste, and touch is only one "folk model" of the sensorium among many, as there are other cultures that count two, three, five, or more categories that do not necessarily correspond to the European model (Pink, 2015). The interrelated gamut of sensory and sense-making perception leads to highly individual ways of seeing or listening (Fors et al., 2013), and the agentic and culturally bound reconstitution of sensory activity indicates that sociocultural processes affect sensory knowledge (Howes, 2003).

The sociocultural aspects of sensory knowledge have important implications for learning and developmental processes in orchestral practices. Sensory modes of knowing are inherently difficult for individuals to communicate about, verbally or otherwise. Yet, the co-constitution and development of common ways of knowing and enacting sensory knowledge are evident and can be more obvious in situations that involve highly developed professional skills. In the practice of auscultation, or stethoscopic listening, medical practitioners use stethoscopes to attempt to listen to sounds for diagnosing pathologies (Rice, 2010). When communicating with each other about this practice, they can use vocal approximations to help mutually identify and distinguish between different sounds of the body and they can discuss

what those sounds might mean. Rice notes that, although there is a “solitary, isolating” (p. S51) aspect to perceptual experience, there is also evidence that their skills in listening and understanding develop and change through repeated experience and attempts at discussion with others. An investigation into the practices of cattle judges found that their use of sight in their judging practice was highly interconnected with their knowledge of cattle health, movement, rearing, and breeding (Grasseni, 2004). This knowledge was based on the judges’ many years of practical experience with cattle and their shared cultural agricultural practices. Meanings constituted within individuals’ sensory perceptions are, thus, subject to negotiation through coparticipation in specific cultural practices, captured, in this instance, by the notion of “skilled vision” (Grasseni, 2009). It has been established that orchestral musicians all experience different demands on their perception and activity, depending on instruments, individuals’ unique personal histories, physiologies, and even the different seats they occupy during rehearsals (Seltzer, 1975). The sociocultural and experiential influences on sensory knowledge are highly suggestive that multisensory experience in orchestral performance can make distinctive contributions to musicians’ learning processes.

Sensory ethnography also deepens the empirical possibilities of examining “embodiment” in musical performance, as the concepts of embodied intersubjectivity and agency are highly implicated in sensory knowledge. Embodied learning is central to how individuals engage in working practices, and, consequently, sensory understandings of space and place are sites of intersubjective knowledge and development (Somerville & Lloyd, 2006). The individual and shared understandings of physical environment and personal situated-ness are argued here to be vital influences on perception and the enactment of subjectivities. They form another aspect of how culturally informed “ways of being” are shared and negotiated. In an orchestral context, there are considerable differences between the physical positions that brass and string players occupy in rehearsal or performance, and it is not inconceivable that this situation contributes to differences in their embodied understandings of how to enact performance (Knight, 2006; Seltzer, 1975). Thus, exploring the multisensory aspects of orchestral performance enables richer understandings of musicians’ embodied knowledge and learning in their intersubjective contexts.

A sensory ethnography was selected to explore the musicians’ world as fully as possible and to provide the broadest basis for description of their experiences by using my own sensory engagement and interaction (Pink, 2009, 2015). In the interests of a naturalistic and self-reflexive research approach, the sensory experience of the researcher is important to an empathetic exploration of participants’ performance experiences. Empathy and

imagination are considered vital to researchers' ability to enter the participants' world of meaning, allowing researchers to learn *from* people, rather than *about* them (Fetterman, 1989; Pink, 2009; Spradley, 1980). Using researchers' own sensory knowledge and experience during observations and interactions also makes the most of their coparticipatory role in the research. Reflexivity involves acknowledging and utilising the fact that one is entering into the intersubjectivity of persons, meanings, themes, and actions, even by just observing and making sense of the experienced situation (Hurdley & Dicks, 2011). As a musician who frequently plays in professional orchestras, albeit not as a permanent member, I would be considered an informed insider in the professional orchestral context. My own personal history of experiencing orchestral performance as a trombone player is important to note, as it forms part of the interactions of the research and the intersubjective generation of the ethnographic account. It is also part of the expert and informed basis on which the sensory environment is experienced and many of the judgements in analysis are made. Through acknowledging and utilising my own sensorial engagement in the orchestral environment, a reflexive and informed account of orchestral musicians' practices, rich in sensory experience detail, can be generated.

To create a sensorially aware ethnography, some specific interviewing techniques were developed to empathetically and imaginatively generate understandings of the participants' sensory experience. The situated immediate recall interview, detailed in the section on procedures, aimed to encourage participants to recall, reflect on, and share their sensory experiences. To understand how musical performance are negotiated and changed, the interviewing procedures targeted the recollections and experiences of very recent occurrences (as much as is possible) in a way that encouraged explorations across multiple sense categories. Some of the sense data aimed to be captured and connected to musicians' subjective and agentic processes included sight, sound, place, movement, affordance, emotion, tactile sensation, and temporal perceptions of playing and performance. Commonly, a participant who uses an explanation or description involving one sensory theme or metaphor (e.g., seeing or hearing) can be implying many others (Pink, 2004). Hence, the interview-produced knowledge concerning these sensory themes is often a gateway to their richly interconnected sensory experience. Similarly, the observational procedures sought to establish links between the observed relationships, negotiations, and actions, as well as my own sensory perceptions of the visual and sonic orchestral environment (Mason & Davies, 2009). These sense-focused adaptations to the ethnographic procedures involving observation and interaction bring depth to the accounts of musicians' experience and practice.

The sensory ethnography, undertaken as part of this research, adapted procedures to place the musicians' multisensory experience at the centre of the accounts of how they engage in orchestral practice. Individuals' senses are held to operate interconnectedly (Pink, 2015), and the experience and knowledge derived from their use are culturally mediated (Howes, 2003). The distinctive and unique sensory experiences of individual orchestral musicians are likely to be important to how they co-constitute their performance knowledge within the practices of the orchestra. Focusing the investigation on sensory knowledge allows the situated-ness and embodied aspects of orchestral activity to be considered. Making use of my own sensory engagement with the musicians and orchestral environment, as an informed insider, is important in generating a reflexive and richly detailed ethnographic account. Adapting the procedures of observation and interaction enabled musicians' sensory experience to inform an understanding of the coparticipation in orchestral practices.

Procedural Overview

The study used a sensory ethnography to generate an account of professional orchestral musicians' knowledges and practices, and the production of this account was used to explore and examine sociocultural aspects of how they engage in and learn through their work. Six members of an Australian professional orchestra were recruited to participate in interviews and observations over a 12-month period. A variety of ethnographic procedures were used with the participants, involving speaking, drawing, playing, and physical demonstration in the rehearsal space. One of the interview designs, the situated immediate recall interview, was specifically developed for this inquiry and is put forward as a contribution to methodological knowledge. Rehearsals, performances, and other workplace environments were observed in conjunction with the interviews. The resulting observational field notes, interview recordings, and transcripts were analysed for the sociocultural themes and processes contributing to the participants' performance knowledge and learning. The findings are presented in Chapters 5 and 6 in the form of an ethnographic account and subsequent discussion.

Methodological rigour, including considerations of credibility, auditability, and fittingness, was made a concern throughout the development of the research design, the conducting of fieldwork, and the analysis and presentation of findings (Corbin & Strauss, 2008). Differences in epistemology between quantitative and qualitative research paradigms have led to addressing internal validity as concerns of credibility in naturalistic inquiry (Lincoln & Guba, 1985). Making research credible, in this context, involves interacting with

participants to confirm shared understandings, creating vivid and faithful observational accounts, bracketing researcher views, preserving semantic integrity during analysis, and maintaining an attitude of ethical and fair dealing towards participants (Tufford & Newman, 2012; Whitemore et al., 2001). Examples of ensuring these intentions included checking shared understandings with participants during interviews, typing and expanding observational field notes as soon as possible, and using participants' own words supported by meanings derived from their context. Considerations of auditability and fittingness are important for allowing others to assess the relevance, reliability, and level of generalisability to other contexts (Sandelowski, 1986). These are demonstrated through consistency in procedures, creating an observable route in analysis, clarity in explanations of concepts and scope, and specifying links amongst evidence, literature, and findings. These efforts were consistently made throughout the investigation with the intention of ensuring the research would make useful and trustworthy contributions to knowledge, and for establishing the relevance and merit of its findings.

Participants and ethical considerations.

The six participants in this study were newly joined members of an Australian professional orchestra, that is, they may be classified as “newcomers” (Lave & Wenger, 1991). For this study, a new member was defined as being within four years of being appointed to the nominated orchestra as a permanent member (i.e., not on temporary contract). An assumption was made that the shorter the length of time that the newcomers have been working together with their colleagues, the more likely it might be that contention and negotiation of musical practice can be more explicit and apparent. There was no restriction on age and musicians were not precluded from selection for having any amount of previous experience with this or any other professional orchestra. This is because the study is about how people engage with new situations and change in response to working with new colleagues, rather than about novice performers or orchestral musicians who are new to permanent roles.

The recruitment process began with approaching the director of orchestra management and the human resources advisor, informing them of the intentions and scope of the research, obtaining access to the orchestra's operations, and coming to an agreement about appropriate observational practices and use of recording equipment. They then assisted in identifying and approaching participants to appraise their interest in participating. As I was personally known to most of the participants through musical work, there was not considered

to be any trust or independence-related issues concerning relationships between musicians and management staff. The participants were selected to include variation in age, gender, instrument type, and level of seniority in the orchestra. The participants included four females and two males, three principal and three rank-and-file members, high and low strings, woodwind, brass, and percussion. Participants were fully informed about the study with the aid of a Participant Information Statement and they signed consent forms (templates of both documents included in Appendices B and C). As described in the section on fieldwork procedures, the participants were each involved in observations and interviews in three separate weeks over the course of 12 months, and consent was re-established prior to participation each week.

As with concerns of methodological rigour, ethical considerations were a part of the research design from the beginning to ensure fair dealing towards the individuals and organisations involved, as well as to contribute to high-quality research outcomes that could continue building trust between the industry and academia. Sensitivity was required in addressing the privacy concerns of the organisation and the individuals involved, and so consent, the use of recording equipment, and the use of data were negotiated throughout the study. Participants were informed of the minor risks of discussing stressful performance events, and care was taken to avoid therapeutic situations arising during interviews (Kvale & Brinkmann, 2007). Concerns about identifiability were discussed with participants, particularly regarding sensitive personal and professional issues. The orchestral organisation and individuals participating in the study are not identified in the dissertation, and measures were taken to further de-identify individuals to protect their anonymity in the relatively small community of professional orchestral performance. These measures involved excluding certain contextual information from interview extracts or observational notes, modifying gender or other biographic details, or combining details of several situations or individuals to present them as a single example. Utmost care was taken to ensure that these measures did not alter or disrupt meaning or the integrity of the connections between evidence, findings, and discussions. For example, in the inclusion of interview extracts or observational field notes, the instrument being played was specified in situations where it was considered contextually or descriptively important but was excluded or modified where the particulars might increase the risk of identifiability. Reflecting the concerns of participants is a critical element of ethical research (Denzin, 1997), and the fact that there are risks involved with discussing and publishing issues that are sensitive or stressful to individuals in orchestral

performance highlights the importance of investigating the challenges to well-being and sustainable orchestral practices.

In accounting for these issues, the study was conducted in accordance with the ethical clearance authorised by the Griffith University Human Research Ethics Committee (see Appendix A: Ethical Approval “GU Protocol Number EDN/48/14/HREC”). Physical data, in the form of handwritten and digital copies of field notes, interview recordings, and transcripts, were stored securely and will be kept indefinitely. Participants were issued with a Participant Information Statement (see Appendix B) before taking part in the research and signed Informed Consent Forms (see Appendix C). Issues around consent and talking about sensitive topics were discussed with participants, and they were able to decide their consent separately regarding participation and audio-visual recording, as shown on the Informed Consent Form. All aspects of the research and fieldwork procedures were fully discussed with the participants and their organisation prior to and throughout the research processes.

In producing the written dissertation, the participants names and some of their personal characteristics were changed to maintain anonymity, as agreed to by the participants from the outset of the investigation. The six participants were given the following pseudonyms: Allan, a principal trumpet; Bridget, a rank-and-file second violin; Chris, a rank-and-file double bass; Deborah, a principal viola; Evan, a rank-and-file percussionist; and Fiona, a principal cor anglais. In many cases, the instrument and section position (i.e., principal or otherwise) is vital information for explaining the social or musical interactions encountered. However, this is information, as well as any small biographical details they may mention in their interviews, may also be enough to identify those participants in the relatively small Australian orchestral scene. For this reason, extra steps have been taken to anonymise the participants in particular examples throughout the thesis, such as further withholding their instrument and pseudonym details, changing gender in certain instances, and combining biographical or circumstantial details of similar occurrences or related experiences and presenting them as relating to one participant. In all of these instances, care was taken to faithfully provide evidence for and illustrate the findings being presented whilst protecting the anonymity of the participants.

Fieldwork Procedures

The procedures enacted were targeted at providing rich descriptions of the musicians’ intersubjectivities and agentic engagement in orchestral work. The observations and interactions aimed to capture the participants’ perceptions, how they constitute

understandings, the cultural material they work with and the social structures and processes that contribute to their learning processes. As summarised in Table 4.1, the study used interviews, non-participant observations of rehearsals and concerts, and participant observations of breaks, intervals, and social meeting occasions. These procedures examined communication patterns, relationships, and the use of cultural interaction. Several interview techniques were used to maximise the collection of data that contextualised sensory perceptions with cultural meaning and social interaction. Situated immediate recall interviews took place after rehearsal in the participants' chairs and focused on sensory engagement and are proposed here as an innovative contribution to methodological knowledge for investigating individuals' coparticipation. The semi-structured interviews included the use of mind maps (Wheeldon & Faubert, 2009) to stimulate participants' recall of awareness, followed by a biographic narrative interview about their musical playing history in relation to orchestral work. In using and integrating these different kinds of procedures, the study combines critical approaches of identifying patterns of power and interaction with interpretive approaches of using participants' words to understand their engagement (Willis, 2007).

Table 4.1. *List of Procedures*

Procedures	Details
Non-participant observations	Observing rehearsals and concerts – spread over several kinds of concert (e.g., major works concerts, commercial music, opera/ballet, light music). Reported via note-taking.
Participant observations	Interacting with and observing the musicians during breaks, intervals, and other non-performance occasions. Took place in company tearooms, green rooms, cafes, and around work-related venues. Reported via post-event note taking.
Situated immediate recall interviews	Special stimulated recall interviews with individual musicians, conducted “on stand”, i.e., in the rehearsal venue at the musicians' chair, with music and instrument, taking place immediately after the rehearsal had concluded and the hall vacated. Video- and audio-recorded.
Biographic narrative interviews	Spoken interviews that combine personal narratives of career learning trajectories and stimulated recall of awareness in rehearsal/performance using participant-drawn maps. Audio-recorded and producing documents of participant-created representations.

The fieldwork took place in three phases of approximately six weeks each, occurring over the course of 12 months. In each phase, the participants were the focus of separate and individually focussed week-long periods of observations. The orchestra's typical weekly activity cycle consisted of 4 days' rehearsal followed by a general rehearsal (i.e., a full run-through of the program) and one or two concerts. Over the course of a week, the selected

participant took part in two interviews, the first a situated immediate recall interview after a rehearsal early in the cycle, and the second a biographic narrative interview at the end of the week. This recall helped in giving two points of reference in the musicians' perceptions of how their work had occurred over the course of the week, occurring more or less either side of the rehearsal process. It also provided an object of focus for the observations for that week and was intended to focus on trajectories that may have been apparent in how intersubjectivity was secured throughout the rehearsal process of the week. The participant also provided a useful focus for the participant observations during breaks in rehearsals, often being able to sit with them and interact with their colleagues. The break in between phases facilitated exit and re-entry to the field, a device that was found useful in generating insight within the ongoing data collection and analysis (Atkinson et al., 2001; Fetterman, 1989), as well as allowing time for analysis procedures. Efforts were made to vary the programs over the course of the fieldwork phase so that different kinds of work could be observed, such as major works and light classic concerts, opera and ballet, and children's and popular music concerts. There was also an attempt to vary the kind of program each participant was observed in during the three different phases to capture the scope of musical work performed by individual orchestra members.

The complete dataset generated by these fieldwork procedures comprised 26 interviews (some audio-recorded and some video-recorded), interview transcripts, 19 participant-drawn mind maps, initial hand-written fieldnotes from observations (approximately 240 pages in bound notepads), and typed and expanded fieldnotes. Approximately 120 pages of hand-written and typed memos for documenting and bracketing my analytical considerations were produced throughout the data collection process and subsequent analysis of the data. Partial and anonymised extracts from a Situated Immediate Recall Interview and a Biographical Narrative Interview and one partial segment of typed fieldnotes are included as examples of the data in Appendices D, E, and F, accordingly.

Observations.

Data collection included non-participant observations of rehearsals and performances, and also more participatory observations in and around these occasions, such as tea-breaks, intervals, and times surrounding orchestral calls. Observations covered several kinds of program, including ballet/opera, children's concerts, commercial music, major works, and variety programs. The reason for spreading the observations over different activities was to capture the greatest possible range of engagement and interaction. It was expected that those

aspects would be affected by differences between musical activities (e.g., different attitudes to pop music and concerts of major works) and performance venue (e.g., concert hall and orchestra pit). All rehearsal and performance calls of a weekly cycle were observed, unless access was too difficult. Observations of the entire week-long rehearsal process enabled consistent documentation of actions, and focused scrutiny on the participants and their patterns of interactions and adjustments in working on a single project. The observations took place in the orchestra's rehearsal studio, office areas, and concert venues, and occasionally in public social meeting areas such as green rooms and cafes. In the first phase of research, the first week was reserved for general observations of the orchestra, without focusing on any one individual, allowing for practice and experimentation with observational and data-recording techniques.

The observation procedures were reliant on note-taking, as video- and audio-recording was considered too obtrusive and highly susceptible to objections from the management and other members of the orchestra. During rehearsals and concerts, observations were made from some distance (i.e., located in the audience) as it was often not possible to be any closer whilst they were working. Notes were written in situ, making periodic descriptions of place, people, and activities, drawing maps and noting timelines. The notes focused on the participants and their interactions, patterns of communication, and engagement in musical actions, as well as their general environment. Participatory observations of interactions during break times did not often allow immediate note-taking, so written records were taken afterwards. Those kinds of observations allowed the opportunity to be located closer to the participants and to be able listen to and interact with them personally within the social context of being amongst other musicians. All written notes were typed and expanded with recalled details as soon as possible (Fetterman, 1989; Spradley, 1980).

Observation schedules were planned ahead of time, but scope was allotted to change the focus of observations when evidence suggested that the data collection could be improved. A schedule was determined for each occasion of observation, planning the time, location, and specific focus of observations, such as communication or playing movements (Friedrichs & Ludtke, 1975). Direct observations were kept identifiably separate from commentary and analytic thought through the use of memos and journal writing (Fetterman, 1989; Spradley, 1980). In the first fieldwork phase, a wide domain of observational focuses was used to generate descriptions of concrete actions of orchestral practices on a frequent basis throughout rehearsals, recording spatial relationships, communications, and

movements. In the second and third phases, observations were focused on communication and critical incidents, as these were identified as important sites of intersubjective understandings during the first phase (Butterfield et al., 2005; Spradley, 1980). Critical incidents were moments identified as potentially containing an experience that was transformative to one or more musicians' performance intentions, understandings, or practices. Examples could include self-corrected mistakes, disagreements or negotiations among musicians, or directions given by conductors or principals.

The observations aimed to examine the intersubjective aspects of orchestral performance by focusing on interactions between colleagues. To achieve this aim, the contentions, negotiations, productive communication, and collaborative efforts that the musicians engaged in were examined by observing verbal, visual, and musical communication. It also focused on how problems were raised, solved (or left unsolved), and dealt with by the musicians. Observations of varying kinds of rehearsal and performance exposed different playing experiences, providing opportunities for examining different kinds of problem solving and negotiation, and looking at when relationships were altered in new situations. Focusing on these concrete manifestations of intersubjectivity produced data that allowed concepts of co-constituted knowledge and learning to be analysed and discussed.

Interviews.

Two kinds of semi-structured interview were used during fieldwork: situated immediate recall interviews and biographic narrative interviews. Situated immediate recall interviews took place in the participants' chair in the orchestra, immediately after rehearsal had concluded and the rehearsal venue was vacated. This design was specifically developed for this inquiry to make use of the physical and temporal proximity to the rehearsal to stimulate participants' recall of their engagement in performance. It is advanced here that situated immediate recall interviews represent a new contribution to methodological knowledge, combining sociocultural and sensory ethnographic concepts in a unique adaptation of interview techniques. Biographic narrative interviews occurred in venues such as lunch rooms, green rooms, and cafes, when those spaces afforded a level of privacy to allow freedom in discussing sensitive issues about work, personal life, or colleagues. Biographic narrative interviews were conducted in two parts. The first, separate to the focus on personal historical investigation, asked them to recall recent moments in rehearsal and draw mental maps of their awareness. The second part focused on their personal playing history in relation to their work in the orchestra. The interviews were designed to provide a

variety of qualitative data types through which specific sociopsychological phenomena could be explored and triangulated. As analytical procedures were involved from the beginning of data collection, preliminary insights into communication and interaction patterns afforded by the observations helped to inform the direction of the interviews. As many orchestral musicians often teach in addition to their performing activity, care needed to be taken that the interview context did not lead to didactic exchanges that would discuss playing in a way that was too abstract or idealised. Consequently, the biographic narrative interviews drew on material encountered in the situated interviews to keep the exchange grounded in the musicians' direct, concrete experiences.

Interviewing is considered a relevant and appropriate way of investigating individuals' personal and social circumstances, although the researcher's power and control over the directions and uses of the interview must be acknowledged and managed. Awareness needed to be maintained that the knowledge generated from the research interview often reflects the researcher's perception of what the participant wished to present. Consequently, interviews are not conceptualised here as the collection of information, but as an exchange of views that acknowledges the input of both researcher and participant and allows the understandings of both parties to change as the interview progresses (Kvale & Brinkmann, 2007). As such, interviews are viewed here as an opportunity to develop shared understandings, incorporating my own sensory perception and engagement with the participants and their environments. The interview designs, primary questions, and follow-up questioning techniques were intended to facilitate this shared understanding by allowing participants to influence direction, focusing on finding common ground, correcting misunderstandings, and confirming or validating the knowledge generated. Beyond controlling the primary questions and interview structure, all efforts were made to avoid leading questions or introducing themes or terms into the interviews. An approach of "evenly hovering attention", as used in psychoanalytical interviews (Kvale, 1999), was found useful in continually assessing the importance of participant-led topics or words and following them via further questioning. The issues considered here might challenge positivist assumptions about the neutrality of interview design and the validity of participants' responses (Denzin, 1997). However, interviews were used in this study to allow my understandings, as a researcher, to develop authentically to the situation through interaction with participants, and subsequently to generate knowledge that is useful to the investigation as well as faithfully and rigorously presented.

The interview recordings and transcripts were used as data for the analysis and presentation of findings, but not without recognising the incomplete and sometimes inaccurate representations they can produce of participants' experience and knowledge. The words captured in these media do not represent an objective crystallisation of the participants' point of view (Kvale & Brinkmann, 2007). Miscommunication or difficulties in conveying meaning can occur, particularly during discussions about perceiving or enacting music performance (Wengraf, 2001). People also often attempt to make reasonable and positive presentations of themselves and their actions, particularly in the context of cordial interviewer/interviewee relationships or when discussing professional situations. Although this inquiry takes phenomenological aspects, such as participants' sensory and historical experiences of the world, as an important consideration, their statements were not accepted uncritically (Fetterman, 1989). Both empathetic and questioning attitudes were adopted towards the viewpoints expressed by participants, and critical comparisons were made between interview statements and observations or between different interviews. The identification of contradictory elements among the different forms of data was not necessarily treated as weaknesses in verification of the data. Rather, differences between statements and actions could reveal tacit assumptions or conventions in orchestral practices. For example, participants' statements that their primary visual focus was on the conductor often stood in contrast to evidence suggesting otherwise, drawn from observations, explorations of their multisensory engagement, and other statements in direct contradiction. Contradictions of this nature are considered to reveal the differences between conventions of how musicians talk about their practices and how they enact understandings that respond to situational complexity. Consequently, both kinds of interviews are included to approach musicians' understandings of orchestral performance from a variety of angles and to rigorously strengthen findings by providing different kinds of evidence.

Situated immediate recall interviews.

Situated immediate recall interviews were conducted on-stand with the musicians at their seats in the rehearsal studio, often with instrument, immediately after the rehearsal. This technique was designed to create the opportunity to stimulate a recall of specific interactions, sounds, spatial perceptions, physical sensations, and movements that participants could demonstrate verbally, physically, or using their instrument. Musicians' performance knowledge is argued to be situationally constituted, and this interview type was designed to make use of the context and close proximity in time to their recent performance as stimuli for

exploring multisensory, situated engagement (Wengraf, 2001). These interviews were video- and audio-recorded to capture the participants' movements, communicative inflections, and performance. The situated immediate recall interviews were designed to contribute to a vivid description of musicians' subjectivities as they recalled their participation in orchestral performance. The interviews aimed to capture musicians' personal awareness of sounds, vision, tactile feeling, time, movement, and sound creation, and to find the links, meanings, and values constituted among them. This procedure was considered a way of accessing, at least partially, the processes of individual subjectivity involved in playing, such as the constitution of judgements, comparisons, and adjustments they construct about their own playing and how those phenomena are connected to their experience of engagement with their colleagues. The data generated through this procedure were useful in discussing the microgenetic (i.e., moment-by-moment) learning processes associated with participants' intersubjective interactions with their participation in orchestral environments and practices.

Situated immediate recall interviews were arranged with the participants to take place immediately after a rehearsal early in the weekly cycle. Consent to video-record was re-confirmed prior to each interview. The interviews used a framework centred around sight, hearing, and tactile sensation, making use of "grand tour" questions (Fetterman, 1989) to instigate discussion of multisensory perception and engagement. Three questions were asked:

1. What could you see and what were you looking at in today's rehearsal?
2. What could you hear and what were you listening for?
3. What could you feel physically while playing? Or: How did it feel to play in this situation?

Follow-up questions were asked to explore the participants' responses, probing topics that related to sensory perception and playing. Participants' eye movements, facial expressions, body movements, and re-enactments of playing or interactions were closely observed and followed up with questioning. When it was felt appropriate, interviews were concluded by asking if participants had anything further to add or if they could think of anything not covered (Kvale & Brinkmann, 2007). Memos were written after the interview regarding my recollections of any moments that were considered notable or on my own personal engagement with the participant or the environment. The interview recording was later watched, and memos were written on any further observations of how the participant was interacting or recalled interacting with their environment. The interviews were then transcribed, with the inclusion of written descriptions of actions or interactions deemed important in the memos.

It is proposed here that the development and use of situated immediate recall interviews for investigating musical performance constitutes part of this inquiry's original contribution to methodological knowledge. The interview design brings together three key features of the epistemology by a unique combination and adaptation of different interview procedures. The interview design responds to a conceptualisation of knowledge as (a) situated and embodied within environmentally contextualised engagement (Lave & Wenger, 1991; Somerville, 2006), (b) co-constituted through practice and interaction with colleagues (Valsiner & Van de Veer, 2000), and (c) accessible through the multisensory coparticipation of the researcher (Pink, 2015). The interviews included the use of stimulated recall techniques to assist in discussing concrete experiences rather than abstractions, using both the workplace context (Wengraf, 2001) and the close proximity in time between rehearsal and interview (Fetterman, 1989) as integral parts of the stimuli. Close observations of participants' responses and re-enactments of experiences and actions, my own engagement with the immediate surroundings, and video-recording for later analysis resulted in a rich source of data on musicians' intersubjective and multisensory engagement with their orchestral environment. This design was adapted during the investigation specifically for this research question and the context of music performance and is not known to be used elsewhere in this format. By exploiting these epistemological positions and combining existing interview techniques, the situated immediate recall interview is considered here to be a useful procedural tool that may find diverse applications in future studies of music performance, among other situations in which participation and sensory engagement are considered important.

Biographic narrative interviews.

The second type of interview used in this inquiry was conducted in two parts, the first part being semi-structured and utilising a stimulated recall technique involving participant-drawn mind maps, and the second part consisting of an unstructured biographic narrative interview. The first part focused on recall of recent performance events and explored sensory awareness by asking participants to draw maps representing particular moments in performance and then discuss the content of the drawings. The data generated by this procedure have more in common with those of the situated immediate recall interviews, however, the procedure is included in this section as it was enacted as part of the biographic narrative interview. The biographic narrative part of the interview focused on each musician's personal playing histories in relation to their current position in the orchestra. The

map-drawing segment generated data related to microgenetic (i.e., moment-by-moment) learning processes through exploring their immediate engagement with their environment. The biographic narrative segment explored personal histories and subjective understandings of self and playing over longer periods of time, consequently generating data useful to the discussion of the musicians' ontogenetic (i.e., longer term) development.

The biographic narrative interviews were arranged with the participants to occur towards the end of the rehearsal period in their weekly schedule. This allowed the two interviews in each week to be spread as far apart as possible and provided a structure for comparing sensory engagement between the beginning and ending of the rehearsal process. Interviews were audio-recorded and took place in venues that afforded a level of privacy, such as lunchrooms, green rooms, and cafes. The map-drawing part of the interview asked the participants to recall two different performance events and to draw a map representing each one. The maps were then explored and discussed with reference to their multisensory awareness and engagement in the performing activities. Once this part of the conversation was concluded, the biographic narrative section of the interview was introduced with an open-ended question about the participant's personal history. The interview was directed using the following questions:

1. Think of a recent moment in a rehearsal or performance when things were going well: Can you draw a map, with you at the centre, of things you could see, hear, or were most aware of?
2. Think of another recent moment, but when things were not going well: Can you draw a map of things you could see, hear, or were most aware of?
3. That concludes the first part of the interview. For the next part, can you tell me about your experiences from when you started playing with this orchestra until now? How have you or your playing changed since then?

The third question asked specifically about their time with their current orchestra but was not necessarily interpreted this way by the participants, as most included additional details of their earlier career. This may be due to the unstructured nature of this part of the interview, as it encouraged the participants to generate and present their own structures and organising factors in relation to their own performance knowledge and development. The language used in initial and follow-up questions was carefully chosen to avoid suggestion of pre-judgement of performance issues, and to respectfully position the participant as an expert informant. The interviews were transcribed, digital representations created of the participant-drawn maps, and both the maps and transcripts were used in the analytical processes and presentation of the findings.

The map-drawing segment of the interview generated data about musicians' engagement with their environment. It provided opportunity to discuss their subjective understandings of themselves and their activities in relation to moments in their experiences of performance (Wheeldon & Faubert, 2009; Willis, 2007). Asking participants to select moments when things were going well or not well allowed them to self-identify critical moments in their enactment of performance knowledge. The benefit of this self-selection is that the moments were likely to be vivid in their recall, enabling more detailed description in writing up and greater credibility in being participant-led. Identifying moments of "good" and "bad" performance were also considered to permit discussion of different kinds of coparticipation, as it was predicted that there would be differences in communication and engagement among colleagues in these contrasting situations. Although both this technique and the situated immediate recall interviews were similarly focused on multisensory engagement with performance, the drawing of mind maps also generated a different mode of data from the earlier interview to provide another perspective on those themes. This type of interview was aimed at examining musicians' subjectivities, in particular their construction of spatial, audio, and visual perceptions and their meanings in relation to themselves and their interactions, as well as the microgenetic learning processes associated with these phenomena.

In the biographic narrative part of the interview, participants were encouraged to explore their experiences of change and reconstitution of playing or understanding throughout their working lives in the form of a narrative. The use of narrative in the interview was not done with the intention of creating a narrative inquiry proper, but was aimed at producing material that could be amenable to an analysis of the historical-experiential aspect of subjectivity (Van de Veer, 1994). The participants commonly selected isolated incidents in their social and musical experience and presented them as part of a narrative that reflected their attitudes towards and evaluations of their own performance at the time of the interview. The observation and analysis procedures were refined throughout the investigation to increasingly focus on critical incidents (Corbin & Strauss, 2008; Flanagan, 1954), as the isolation and recall of particular incidents in their experience appeared to be most salient to the musicians in their evaluations and narratives.

Aspects of narrative and personal-historical theory and interview procedures were incorporated from the beginning of the investigation, as they were considered to be useful means of generating ethnographic data about development (Rosenthal, 2007; Wengraf, 2001). The data generated from narrative-focused interviews are understood to be relational, that is, edited by the participant to present themselves or particular incidents in a certain way, and

interpreted by the researcher within their social interaction (Barrett & Stauffer, 2009). This was found to be the case, as the narratives musicians chose to present influenced their selection and interpretation of critical incidents. Conversely, their use and presentations of those incidents could influence the narrative they created about their performance. The quality of how narratives are presented and how they are interpreted depend on positive and trustful relationships between those involved (Barrett & Stauffer, 2009), and care was taken to maintain relationships and not allow interviews to become therapeutic interventions (Kvale & Brinkmann, 2007). As a research technique, the use of narrative interviews took a constructivist approach to subjectivity and attempted to make use of rich and persuasive description to communicate meaning (Barrett & Stauffer, 2009). It also allowed insight into the participants' epistemologies and ontogenetic development along narrative dimensions, through showing what they understand about how their knowledge has changed over time.

Analysis

Analytical processes were present throughout data collection through to the end of writing up the findings (Spradley, 1980). Analytical processes, or interpreting, assessing, and organising information, took place from the beginning of the data collection process, for example, in participant recruitment decisions and in the use of follow-up questions during interviews (Ezzy, 2002; Kvale & Brinkmann, 2007). Initial analytical processes employed using the data were thematic, that is, they involved searching for themes. Domain analyses (Spradley, 1980) and coding for process engagement (Saldaña, 2009) were used to explore the data, generate descriptions, and elaborate concepts of how musicians engaged in orchestral performance as well as the intersubjective contributions to microgenetic processes, that is, short-term (i.e., occurring over a short period of time) changes in practice and knowledge. Narrative analytical procedures (Rosenthal, 2007) and dramaturgical coding (Saldaña, 2009) were used to explore, describe, and discuss how musicians' ontogenetic processes, that is, long-term development, interacted with their understandings and presentation of personal history and current participation. These procedures developed both the identified themes and their supporting evidence together, and the clarity of the themes and arguments was refined through the writing of the ethnographic accounts contained in Chapters 5 and 6 (Atkinson, 1990; Robson, 2011).

Describing or analysing the content of the data is held to require making inferences, involving the construction of an argument using selected evidence and researcher assumptions about the subject matter (Wengraf, 2001). This occurs even throughout the

interview and observation processes, as the researcher must make judgements about what they experience or comprehend. Decisions are then made about what to focus on based on those judgements. Much of the inferential decision-making done in the conduct of this research drew on my prior knowledge, expertise, and assumptions as a professional orchestral performer, but misinformation was also assumed to exist alongside this prior knowledge (Wengraf, 2001). My prior sensory and performance experiences were utilised in fieldwork and analysis as far as was useful, but the practice of reflective memo-writing was used to maintain an attitude of questioning and allowing for those assumptions to change. The presence of analytical processes was kept apparent throughout the research process by checking and confirming shared understandings with participants during interviews, continuous and early writing up of observational notes and interview transcripts, and using memo-writing to separate analytical thoughts from other material (Ezzy, 2002).

The analytical procedures undertaken using the collected data were thematic analyses, that is, searching for occurrences of meaning that arise from the data as they are examined for ideas and categories of thought (Ezzy, 2002). These procedures allowed emergent themes to be identified, particularly in the case of the different participants with their unique personal historical backgrounds and situated perspectives. What is important to a principal string player may differ from what is important to a rank-and-file wind player, and thematic analyses allowed a theme to be identified and differentiated even when the phenomenon in question was only part of one musician's experience.

Initially, domain analyses were used to explore and identify patterns in musicians' categories of thought in relation to their environment and activity (Spradley, 1980) and to generate a participant-driven language for elaborating the findings. The observational field notes were systematically and iteratively coded to generate domain formulae, such as x is a kind of y , where x is the object of observation and y is the domain category. This process was used to identify and categorise various phenomena, such as relationships, sensory engagement, spatial arrangements, actions, communications, negotiations, performance incidents, and performance processes. For example, two colleagues making eye contact and raising eyebrows is identified as a kind of non-vocal communication. The resulting domains generated from the observational data were compared to interview data for corroboration and refinement, so that participant-directed objects and languages could be used when appropriate. As a primary focus of this study, observations related to sensory categories were analysed in this manner. This was, firstly, to identify and characterise the participants' understandings, uses, and values associated with sensory experience and, secondly, to

identify any multidimensional connections among those sensory categories (Pink, 2009). The domains are, thus, supported by and built from evidence from across the whole body of observational and interview data. These domains or categories of thought were used to form the language and direct the focus of subsequent analysis, presentation, and elaboration of the ethnographic account.

Process coding was also used to identify, differentiate, and explore the participants' actions and interactions (Corbin & Strauss, 2008; Saldaña, 2009) through which their intersubjective participation in orchestral practices could be discussed. A process is considered here to be an action, interaction, or kind of engagement that can be described using a gerund or "-ing" word, for example, visualising or negotiating. Thus, process coding aimed to identify and sort the participants' observable processes. This analysis was aimed at describing and exploring concrete instances of how orchestral musicians participate in their work together and, subsequently, at addressing the inquiry's conceptual background of intersubjectivity. Both the domain analyses and process coding were used to generate the categories of rehearsal processes described in Chapter 5 for explaining and elaborating musicians' intersubjective engagement in orchestral practices.

Elements of narrative and dramaturgical analysis were used to interpret the interview data by exploring the connections among participants' performance knowledge and values, their biographic contextualisation, and their engagement with current experiences (Barrett & Stauffer, 2009; Ezzy, 2002; Saldaña, 2009). Both narrative and dramaturgical coding processes involve interpreting the stories people present in comparison with literary constructs, for example, by identifying characters, motives, conflicts, motifs, or form. By identifying some of these storying constructs in use by the participants, structured interpretations could be made of otherwise messy accounts to allow clearer comprehension of what they were communicating. Some examples include the portrayal of auditions as conflicts to be resolved, former teachers as characters who provide relevant help, or time spent overseas or in another orchestra as false paths. This was relevant to exploring and interpreting the participants' ontogenetic development as it gave clarity to the participants' connections between their assessment of their performance knowledge and elements of their personal-historical and immediate situated experiences. The coding and analysis of these incidents was conducted by exploring their connections to intrapersonal and interpersonal activity, musicians' recalled and current environments, and place within their overall narratives (Saldaña, 2009). Narrative and dramaturgical analyses are considered appropriate here because they utilise the human capacity and tendency to create narrative (Ezzy, 2002).

This was found particularly useful in exploring and elaborating sociocultural and personal-historical contributions to the musicians' performance knowledge and values. Eliciting and analysing narrative configurations, contexts, and meanings about how the participants' playing had changed specifically targeted emic understandings of how and why changes in their practice occurred.

The use of the thematic analytic procedures described here was aimed at probing for explanations of what orchestral musicians do as they engage in their work together and how learning and development take place within this co-activity. Through domain and process coding, a robust set of categories was developed that described what musicians perceived within their environment (i.e., domains) and how they acted and interacted (i.e., processes). Using narrative and dramaturgical coding, their knowledge and interaction through performance could be linked to their personal-historical narratives. Hence, changes in their knowledge were interpreted and explored by the participants in the context of their engagement with orchestral performance over time. The findings chapters reflect these two aims, with the first setting out musicians' processes of engagement in rehearsal and the second elucidating their short- and long-term changes in performance knowledges and abilities. The findings of these initial data analysis processes were refined and developed through writing the ethnographic account.

Presentation of findings.

Through the process of writing up ethnographic accounts, the findings of these thematic analyses were put through a content analysis, that is, they were critically explored with reference to the conceptual framework of this inquiry. The writing of an ethnographic text plays an analytical role in how it shapes explorations of the data, descriptions of themes, and explanations of larger concepts (Robson, 2011). From the sociocultural standpoint of the inquiry, producing the ethnographic accounts allowed an exploration of orchestral practices from new perspectives, and described new insights in relation to intersubjectivity, agency, and culture. Through subsequent discussion, it sought critical explanations of relationships between coparticipation in orchestral work and learning. By comparing the interpretations of the data to the conceptual framework of agency, culture, and intersubjectivity, orchestral working life is reframed in the context of its learning and developmental processes and agentic coparticipation in orchestral practices.

The different forms of data (e.g., interview, observational notes, and mind maps) were analysed and included in the elaboration of the actions and processes in which the

musicians engaged. In building levels of evidence within the written findings, specific statements about observed incidents were connected to specific statements about analysed categories of thought, and these were connected to general statements about the particular orchestral culture (Spradley, 1980). The analysis and presentation of sensory-related data are frequently combined, as descriptions of participant experience were considered and refined in relation to researcher experience. Altogether, the combined analysis and presentation are a continuous “bringing together” and reconstitution of the data and researcher experience. This created a reflexive, contextualised, and rich text that attempts to vividly describe the sociocultural aspects of orchestral performance and persuade the reader of their importance to musicians’ practices (Pink, 2009). Though producing the ethnographic accounts linking data, analyses, and discussions, further analysis occurs to explain and elaborate the intersubjective and experiential processes that contributed to changes in the participants’ performance knowledge or practice.

To summarise the analytical processes involved in this investigation, analysis was present from the beginning of the method design to the writing of the dissertation, involving interpretive, thematic analyses and critical, content-based analyses. Interview designs, the selection of follow-up questions, and situation-contingent changes made to observational procedures all included analytical thought in making evaluations and decisions. Thematic analytical procedures were employed to generate and substantiate interpretations of the data. These included domain analyses and process coding to explore musicians’ categories of thought in relation to their enactment of orchestral performance. Narrative and dramaturgical analyses were used to explore connections between personal-historical experience and musicians’ attitudes and values regarding performance. Through writing up the ethnographic accounts of these findings, further content-based analysis was involved in critically appraising the connections between those findings and the conceptual background of the study.

Summary

A sensory ethnographic approach was adopted for this inquiry to investigate and make use of the sensory environment of orchestral musicians, as their interconnected sensory experience is considered crucial to their intersubjective constitution of performance (Pink, 2015). As an informed insider in professional orchestral performance, this approach allowed me to make use of my own historical and immediate sensory experiences within the encountered situations to generate an empathetic and reflexive ethnographic account. The

procedural techniques used in data collection and analysis targeted the exploration and examination of multisensory experience, interaction, and engagement.

Six participants were recruited from an Australian professional orchestra with a mixture of age, gender, instrument type, and level of hierarchical seniority, that is, rank-and-file and principal players. They were fully informed about all aspects of the research and they signed consent forms, and consent was constantly renegotiated and reaffirmed throughout the research process. Data collection took place over 12 months and consisted of participant and non-participant observations, as well as multiple interview techniques. Observations were recorded through note-taking during and after concerts, rehearsals, and breaks, and were expanded with detailed descriptions later the same day. Situated immediate recall interviews were video-recorded at the participants' chair immediately following rehearsal and were focused on concrete aspects of their perception and interaction. Biographic narrative interviews were used to explore participants' personal histories and subjective understandings of self and performance over time. Semi-structured interviews were also used to explore awareness and performance with stimulated recall techniques of asking participants to draw mind maps of specific moments in performance. The situated immediate recall interview procedure was purposely designed for the situations encountered in studying ensemble performance and is put forward here as part of this investigation's original contribution to methodological knowledge.

The interview and observational datasets were analysed for themes and categories of thought, as exercised by the participants. Domain analyses (Spradley, 1980) collected and refined a language for describing the musicians' categories of thought regarding their engagement in orchestral work. Process coding (Saldaña, 2009) was employed to identify and categorise actions, interactions, or engagements. Narrative and dramaturgical coding (Barrett & Stauffer, 2009; Saldaña, 2009) were used to explore how the participants connected their performance knowledge with their historical and experiential understandings of themselves. These analytical procedures investigated two main aspects of the research question, that is, what orchestral musicians do as they engage in their work together and how learning and development occur within this co-activity.

The findings chapters reflect these two aims, focusing in turn on what engagement means in orchestral performance, followed by the developmental processes that can occur through that engagement. Writing the ethnographic account to present the findings of the analytical procedures also played an analytical role in refining and exploring the findings (Robson, 2011). In this dissertation, the ethnographic account is presented alongside the

discussions of its findings. Through this process, a kind of content analysis was performed, in which the ethnographic findings are critically examined with reference to the literature and conceptual framework underpinning the study. In this way, the ethnographic account is used to address the sociocultural focus of the inquiry. The arguments in the following chapters are presented using collected data (i.e., interview transcripts, field notes, and mind maps) and findings of analytical processes, as well as specific and general discussions about the links between musicians' intersubjectivity in performance and their learning processes.

Chapter 5: Engaging in Orchestral Work Through Processes of Rehearsal

This chapter presents part of the findings of an investigation into how intersubjectivity arises as professional orchestral musicians engage together in and learn through their work. The focus of this investigation is considered to fall into two parts, that is, understanding what orchestral musicians do and how learning takes place within their activities, and this chapter addresses the first of those two elements. In Chapters 2 and 3, musicians' well-being and career sustainability were identified as key issues in orchestral performance (Ascenso et al., 2017; D. Bennett, 2008; Dobson, 2010a; Rink et al., 2017), and it was proposed that these be investigated by comprehending musicians' learning and development through coparticipation (i.e., the interaction between agency and affordance Billett, 2002b) in shared cultural practices and understandings. The sensory ethnographic methodology employed to investigate this topic was presented in Chapter 4, detailing the procedures used to explore orchestral musicians' sensory engagement with their environment and their embodied experiences of performing (Fors et al., 2013; Pink, 2015). This chapter (5) identifies, illuminates, and elaborates the processes the orchestral musicians who participated in this study were found to use, providing an explanation of engagement and intersubjectivity, or shared values, attitudes, and practices, within the context of orchestral performance. The following chapter (6) explores how their learning and development occurred within this engagement in orchestral performance.

Asking what orchestral musicians do in a detailed way is of interest to many actors within the classical music industry, as most individual practice and orchestral rehearsal work takes place out of public sight (Lehmann et al., 2007; Seltzer, 1975). Even aspiring orchestral students often have a limited understanding of what the experience of professional orchestral work actually entails (D. Bennett, 2008; Steptoe, 1989). Understanding what orchestral musicians do on a daily basis is complicated by the fact that their work relies heavily on their coparticipation and coordination with a large number of other musicians (Brodsky, 2006; Dobson & Gaunt, 2013). Thus, intersubjectivity - understandings of self and activity that are shaped and shared through social interaction and co-action (Giddens, 1984) - plays a part in comprehending orchestral practices. The findings presented and discussed here explore how a selection of orchestral musicians engaged with their work and how this affected the success of their working activities and careers, including their well-being.

Five processes are presented here that constitute how the professional orchestral musicians who participated in this study engaged in their work and these processes are proposed to contribute to a metaprocess of “rehearsal”. The five processes comprise (a) awareness, (b) communication, (c) evaluation of performance, (d) acting like a professional orchestral musician, and (e) the formation of playing intentions. These processes contributed to how these orchestral musicians enacted their performance, in that they each shaped the playing outcomes of the individual participants and the orchestra collectively. It is advanced here that these processes also contribute to how the musicians engaged in performance together and arrived at shared values, knowledges, and practices; that is, how intersubjectivity arose through their coparticipation (Billett, 2002b) in orchestral performance. Taken together, these processes constitute the kind of engagement that orchestral musicians recognise as rehearsal, a metaprocess that is coproduced and that forms a constant part of their performance activity. The term rehearsal is used in this context to describe a constant process of engagement with performance, rather than a session of practice within a defined time. The five processes are elaborated in this chapter, as are explanations of how they constitute the process of rehearsal through their contributions to performance and intersubjectivity.

Processes That Support Playing in Orchestral Performance

The primary purpose of this chapter is to describe what professional orchestral musicians do as they engage in their work. Thematic analyses of the complete data set indicated a distinction between playing and non-playing processes that influenced how musicians executed their performance. Playing refers here to physically making a sound through an instrument. It is enacted simultaneously with many other kinds of physical, mental, and social processes that can substantively change what is occurring in the performance (Hargreaves & North, 1997; Parncutt & McPherson, 2002). There were occasions in the observations when the musicians leant into their music stands or visibly reduced or increased the amount of physical effort being used as they engaged with the score to play different passages. On occasions such as these, it could be inferred that the musicians were making use of other processes to adjust their performance, such as communicating with colleagues or directing their awareness in particular ways whilst playing. Although playing actions are easily distinguished from “non-playing” actions, it can be supported from these observations that playing is interrelated with other physiological, cognitive, and social processes (Deutsch, 2013; Hargreaves & North, 1997). A current concern in the music

performance literature is that musicians and music students can focus on “playing” in a way that reduces performance to this physical action, potentially decontextualising it from the realities of its mental and social aspects or possibilities of bodily injury (D. Bennett & Bridgstock, 2014; D. Bennett & Freer, 2012; Cottrell, 2004). To understand changes in playing actions and address the broader context of performance, it is necessary to investigate and explain those other non-playing processes through which musicians enact change in their performance.

The following vignette, taken from observational fieldnotes, illustrates that, whether they are playing or not playing, the musicians continued to engage in psychological and interpersonal processes that are central to orchestral performance. During a stage rehearsal for an opera, one of the two violas sitting on second desk (i.e., the second music stand in this section with two musicians to a stand) plays a subtle wrong note and she and her desk partner (i.e., the other musician in the pair) nod their heads in toward each other. While the rehearsal continues around them, they continue reading and playing the music and do not make eye contact. However, their expressions hold a hint of amusement for a while, which slowly fades as they play on. They arrive at a short rest in their part and put their instruments down while the orchestra continues around them. The outside player of the pair looks on while his partner, who made the mistake, leans into the stand, picks up a pencil, and marks something in the section they just played. She is not yet finished writing when their rest is over, and the other violas put instrument to shoulder and begin playing again. She finishes writing, sits back upright, and joins in with the rest of her section.

Meanwhile, over in the second violin section, two musicians on second desk talk discreetly whenever they are not playing. Their conversational turn-taking pauses and recommences around segments of playing and resting. During a long rest, the principal on the first desk turns around to face them and contributes to their conversation with an animated expression. They all cease talking to each other as they reach another, more vigorous segment of playing. After this, the conductor cuts the orchestra off and makes some comments about parts of the piece they have just played through. The second violins look up at the conductor, look at their parts, and nod. They begin playing again as the conductor brings them in. They come to another rest in their part and the principal turns around and talks to the second desk again, all with the appearance that they are carrying on the content, energy, and mood of the conversation they left before the other playing activities intervened.

Throughout this short scene, the musicians are engaged in more than just playing actions: They are observed, for example, to be making use of communication, sensorial

awareness of their colleagues, and evaluations of how the performance is going. Detailed and regular descriptions of the observations (Friedrichs & Ludtke, 1975) were recorded throughout the rehearsal sessions during this week, and process coding procedures (Saldaña, 2009) were employed to identify as many distinct processes as possible. Throughout this rehearsal session, approximately 80 musicians engaged in similar patterns of activity, all the while interacting with the musicians, equipment, and sounds that surrounded them. Analysis of the observations indicated that those interactions include, for example, repositioning seats and stands, leaning back into chairs, commenting about the music just played, looking up at the stage, or listening to other musicians play their parts. The musicians moved through many of these activities, sometimes engaging in several at once or sometimes only one at a time. Towards the front of the orchestra, closest to the conductor, the string players changed their bodily postures very little, regardless of whether they were playing or had rests. Closer to the back, the winds and percussion had some longer rest segments and they changed bodily posture more frequently. Facial expressions around the orchestra mostly appeared neutral or passive, apart from occasional hints of grimaces, amusement, or boredom, as well as slight hints of fatigue in the musicians' faces and bodies towards the end of the rehearsal session. These facial expressions occurred both whilst the musicians were playing and when they were not playing. As these examples from observations illustrate, distinguishing non-playing actions and examining their context in the musicians' activities indicates that they, firstly, can have an impact on musical performance and, secondly, form part of the orchestra's shared practices of performance.

The musicians described in the vignette above are doing much more than physically playing an instrument: they are engaging in physical, psychological, and social processes that have an impact on how the performance is taking place (Davidson & Good, 2002; Gaunt & Dobson, 2014). It is not difficult to draw a distinction between observed actions that are "playing an instrument" and those that are not. It is more difficult to distinguish subsequently between actions that are connected to playing and those that are not. For example, whilst the descriptions of the viola players' activities all appear directly related to their playing, it is more ambiguous as to whether the violins' talking activities were connected to playing. The conversation between the second-desk violin players may or may not have been related to their performance. The involvement of the principal, however, in making the effort to turn around from the first desk during the rehearsal, is suggestive that at least some of the conversation might have been about performance. Even from an informed observer's perspective, it is also difficult to distinguish between bodily postures that are necessary for

playing and those that are not, such as staying upright during rests, lowering the instrument to the lap, leaning back in the chair, or vacantly looking around the room. Part of this difficulty lies in the fact that approximately 80 orchestra members in the room were all repeatedly engaging in some variation of these postures throughout the entire rehearsal, making the group's use of facial expressions and bodily postures highly complex. Thus, grouping the non-playing processes together into like categories is necessary to make sense of these activities in their complex and ambiguous contexts, as those actions form part of the orchestra's shared working practices.

Examining the interplay between playing and non-playing activities within orchestral performance reveals some underlying processes that the musicians considered appropriate ways of engaging in their work together. The literature on workplace learning demonstrates how trivial, but regular, details of conduct at work become sites where working subjectivities, or understandings of the "self at work", are enacted and generated (Billett, 2010a; Church, 2006; Fenwick, 2008). Within this orchestra, the minute activities described above formed some of their conventions for engaging in orchestral performance. These activities are connected to a broad set of practices that orchestral musicians in general commonly find critical for participating in desirable work practices (Hager & Johnsson, 2009). The verbal conversation among the violin players described in the earlier vignette occurred immediately around the musicians' playing activities, and the viola players engaged in their non-vocal exchange whilst they continued to play. Both are processes of communication and both are subject to the musicians' understandings of what kind of communication is appropriate in these different contexts. The viola player who, along with her partner, realised she had made a mistake had, very likely, made an evaluation about what that mistake was, what should occur next time through that segment, and how she could affect that change. She engaged in these processes as she carried out the activities of playing, exchanging looks with her colleague, and writing in her part. It is proposed here that in amongst the activities of orchestral work, such as playing a segment of music, talking to a colleague, or adjusting seats and stands, the musicians engaged in certain personal and interpersonal processes that they considered necessary or important for carrying out orchestral performance, and this chapter elaborates what those processes are and how they can contribute to performance.

The non-playing activities identified in observations and analysis were grouped into five categories of processes through which these musicians engaged in their work. Those processes, listed in Table 5.1, comprise (a) awareness, (b) communication, (c) evaluation of performance, (d) acting like a professional orchestral musician, and (e) the formation of

playing intentions. These categories were arrived at via thematic analyses, including process coding (Corbin & Strauss, 2008; Saldaña, 2009) and domain analyses (Spradley, 1980). Process coding identified all observed instances of actions, interaction, or kinds of engagement that could be described using a gerund or “-ing” word. Domain analyses were carried out by systematically and iteratively coding those processes to generate domains by using the formula “*x* is a kind of *y*”, where *x* is the process observed and *y* is the domain category. These analyses included data from interviews with participants to incorporate information based on their sensory awareness and engagement, and to generate findings with participant-led language, where possible. Amongst the musicians’ observed concrete practices, most of these processes occurred concurrently. However, by separating them in this analysis, their connections to playing and to intersubjectivity in orchestral performance can be more clearly elaborated and explained. Intersubjectivity is regarded here as the shared knowledges, values, and practices that come about through individuals participating in and negotiating activities together (Giddens, 1984; Rogoff, 2003; Valsiner & Van de Veer, 2000). This kind of examination highlights the importance of processes that are not ordinarily considered musical but are essential for a group of orchestral musicians to perform together. Indeed, understanding these rehearsal processes contributes to our understanding of how musicians find ways of working together to perform as an orchestra. Each of the five processes listed in Table 5.1 are elaborated later in this chapter, examining what they are, how they relate to each other, and how they contribute to intersubjectivity in orchestral performance.

In overview of the processes set out in Table 5.1, awareness is musicians’ perception and consciousness of what is happening around them and within their own physical, psychological, and social activity. Listening and watching others’ performances and focusing on their own sound whilst playing are both examples of musicians exercising processes of awareness. Different kinds of awareness observed include being open and receptive to whatever phenomena presented itself, deliberately focusing on specific objects, being aware through moving or doing, and deliberately interrupting or breaking awareness to manage stress and fatigue. Awareness is crucial to communication, both for those sending and receiving information, and the quality of awareness can affect how performance practices or knowledge are negotiated amongst orchestral musicians.

Table 5.1. *Processes of Rehearsal in Orchestral Performance*

Rehearsal process	Defining description	Example instances
Awareness	Consciousness of events/objects in musicians' orchestral environment and physical, psychological, and social activity	Watching/listening to whole orchestra playing; Focusing on own or colleague's playing
Communication	Interaction between musicians that involves sending and receiving information	Commenting on playing; Making eye contact
Evaluation of performance	Appraisal and judgment of own/others'/orchestra's performance	Critically listening to own playing; Commenting to neighbour about quality of rehearsal
Acting like a professional orchestral musician	Musicians' understanding of appropriate ways of acting and interacting in an orchestral workplace	Arriving early for rehearsal; Complaining about conditions; Telling stories/jokes about other musicians
Formation of playing intentions	Effortful audiations (i.e., mental creations of sound) for immediate or future performance	Miming or mentally rehearsing own part; Studying the part in response to comments by conductor/principal

Communication refers to the interactions among musicians that involve sending, receiving, and interpreting information. Observed examples of communication include making direct comments to colleagues about a passage that had just been played or making eye contact with a colleague to acknowledge a mistake. Communication can take vocal and non-vocal forms and, subsequently, can be engaged in whilst both playing and not playing. The deliberate withholding of communicative sounds or gestures also falls into this category of communication, as this can affect how performances are enacted amongst orchestral musicians. Communication is a means of conveying ideas and directly negotiating knowledge, values, or practices and, thus, is a critical site from which intersubjectivity arises.

Evaluations of performance are the appraisals and judgments musicians make, whether communicated or not, of their own performances, those of colleagues, or of the orchestra collectively. Observed instances, corroborated by participant interviews, include musicians critically focusing on their own playing or discussing the quality of a rehearsal with a colleague. Evaluations of performance were found to be directed towards musical aspects of performance and non-musical aspects of professional behaviour. How, or whether, evaluations of performance are communicated amongst colleagues can have complex and long-lasting impacts on trust in relationships. Critical appraisal and aesthetic judgement about performance are encouraged and elicited from musicians throughout their education (Kingsbury, 1988) and are inferred to become a near-constant part of professional musicians'

engagement with their surroundings and their own playing (Dobson, 2010b; Seddon & Biasutti, 2009). Thus, musicians' evaluations of performance are inferred to be closely tied to their awareness. These evaluations can be performed individually, contributing to musicians' personal understandings of performance, or they may be performed interpersonally, communicating criticism or praise of performances amongst colleagues.

Acting like a professional orchestral musician is an aspect of performance that refers to how musicians understand and enact appropriate behaviours and how they influence others in an orchestral workplace. For example, a musician's belief that it is most appropriate to arrive an hour before rehearsal, whether this belief is communicated to others, and how early the musician actually arrives all have an effect on the musician's own engagement in orchestral work as well as influencing what others might choose to do. How orchestral musicians interact through telling jokes and stories is also part of the process of sharing and negotiating practices, values, and knowledge appropriate to a professional orchestral discourse. The musicians who were observed and interviewed were found to engage in this process in ways that were discursive towards both "professional" and "informal" situations, and this process affected expectations of how the other processes of rehearsal could be enacted.

Playing intentions are effortful audiations (i.e., mental creations of sound) that musicians engage in forming and re-forming for immediate or future performances. This process was described in interviews and was inferred to be occurring during observed instances in which musicians were, for example, miming, mentally rehearsing a passage, or studying their own part in response to comments by a conductor or principal. Engaging in effortful audition was found to be closely related to multisensory anticipation and prediction, advanced here as an explanation for, as an example, how musicians make near-immediate adjustments to their playing during performance. Through communication and repeated performance together, the musicians were inferred to be negotiating and arriving at shared playing intentions as well as shared concrete practices. In engaging in the formation and re-formation of playing intentions, orchestral musicians made use of awareness, communication with others, and their evaluations of their own and others' performances, and were affected by their shared expectations of how professional orchestral players act.

It is proposed here that, together, these five processes of engaging in orchestral performance contribute to a metaprocess of rehearsal, that is, the musicians' cocreated constitution and reconstitution of performance. Each of the processes described here are means by which individual musicians' performance knowledges, values, and practices can

undergo change and reconstitution. Through engaging in them together and negotiating how performance proceeds, the processes are also a means of constituting and reconstituting change in the interpersonal knowledges and practices amongst an orchestra. Many of the observational examples presented in this chapter might be recognised and described by musicians through the colloquial term “rehearsing”. A technical definition of the process of rehearsal in orchestral performance is advanced here, underpinned by the non-playing processes identified in this investigation. Rehearsing, in this technical sense, is described here as the personal and interpersonal process of progressively constituting and reconstituting musical performance. Through engaging in these processes of interpersonal negotiation and change around performance, orchestral musicians can “improve” their collective performance, that is, gradually shaping and reconstituting it towards the performance they jointly intend to realise.

To summarise these broad findings about how these orchestral musicians engaged in their work, they took part in playing actions (i.e., the physical production of sound through an instrument) as well as non-playing activities that were connected to how the orchestra’s performance occurred. Non-playing activities could occur simultaneously or alone, and they affected both individuals’ performances and how the musicians performed together. These physical, psychological, and social activities could be more or less directly related to playing, but, nevertheless, they formed part of the orchestra’s shared practices of performance. That is, these activities contributed to the personal and interpersonal processes that the musicians found important for engaging in their performance together. The processes fall into five categories, including (a) awareness, (b) communication, (c) evaluation of performance, (d) acting like a professional orchestral musician, and (e) the formation of playing intentions. These categories are advanced as constituting the metaprocess of rehearsal, in that they are the means by which an orchestra’s shared performance practices, values, and knowledges can be intersubjectively negotiated and reconstituted. How these five processes occurred and how they contributed to intersubjectivity are explored in the following sections.

Awareness

Awareness is regarded here as musicians’ perception and consciousness of what is happening around them and within their own physical, psychological, and social activity. Through this investigation, awareness was found to be a fundamental process of how the musicians engaged with all aspects of their performance environment, as described in other orchestral performance research (Dobson & Gaunt, 2013; Hager & Johnsson, 2009). It was

found that any object of awareness, including communication, thoughts, bodily sensations, or another colleague's playing, could be a point of reference for use in performance. Four different kinds of awareness, listed in Table 5.2, were identified: (a) an open, receptive awareness; (b) awareness with a specific focus; (c) awareness through movement/action; and (d) interruption of awareness. The musicians' use of awareness appeared to respond to situational contingencies, such as difficulties in performance or boredom. The different kinds of awareness were identified through rehearsal observation and discussions with the musicians about their sensory engagement whilst performing.

Table 5.2. *Demonstrations of Awareness*

Kinds of awareness	Instances
Being open, receptive	Watching/listening to orchestra playing; Sitting unfocused but alert to cues
Focusing on specific object	Focusing in on own or colleague's playing; Looking at source of musical/non-musical sound
Awareness through moving or doing	Moving body in time with pulse; Moving body simultaneously with others to facilitate playing (e.g., pizzicato, breathing, phrasing)
Interrupting awareness	Deliberately disengaging from orchestra activity when not required; Breaking/dropping focus to think about something unrelated

The musicians who were observed and interviewed frequently appeared to adopt an open and receptive awareness to deal with whatever events arose in performance situations within the orchestra. There were many occasions during interviews when the musicians described having to coordinate with multiple points of reference regarding musical events such as timing or phrasing, as described in this interview extract with Allan, a principal trumpet player:

Allan: So, it's like a bubble around me, which sounds strange because you would have thought I should be aware of everything ... there's a direct contact with the conductor, like almost a tunnel vision, and it's a peripheral kind of information ... strings. And then there's more immediate awareness ... winds, percussion, and it feels very much like this is a unit here with the brass section. There's a flow of information that's changing in order of importance, but I feel very aware of *me* ... just as in centred, and very focused on ... [pointing to front, indicating the conductor] this relationship.

Many elements and objects are encompassed in this description. These include Allan's own playing, but, crucially, he mentions that not everything in the environment needed to be included as a priority. He explains that not everything is of equal importance and the relative importance of different objects can change with the situation. A similar description of

orchestral musicians' spread of attention over many objects whilst evaluating their priority has been elaborated in the metaphor of "radar" (Dobson & Gaunt, 2013). This metaphor was argued to relate how, as orchestral musicians engage in their work, they are frequently "adapting and synchronising to any number of their colleagues, forming a rapid chain of action and reaction within a complex web of allegiances and hierarchies" (p. 31). During rests, the musicians in the present study were most often observed to be sitting with a posture and expression of alertness whilst looking at the conductor, their part, or a colleague. When using this kind of open and receptive awareness, the musicians appeared to be responding to and adapting their performance with a larger part of their activity or environment.

Focusing awareness in on a specific object, such as one's own playing, a colleague, or a specific aspect of technique, was another manifestation of awareness observed in this study. It is characterised by a temporary narrowing of attention to a limited area and exclusion of other sources of information, such as sound or movement.

Bridget: You start looking out just to kind of grab on to someone, for me it was one of my section principals, I could see her out of my eye quite clearly without having to look away from the page too much ... I was at the back of the section ... it's kind of hard to tell sometimes when to play, so I just kind of look towards someone who's up in the thick of it, and who's more likely to be in the right spot.

In this interview extract, Bridget, a rank-and-file violinist, uses the words "grabbing on" to the principal in her section, indicating this narrowing of attention. In this example, she describes the passage of music being played as a demanding one and implies that she could perceive conflicting points of reference around her regarding note placement or perhaps other performance details. This situation appears to have required her to focus on what she assessed to be the most valid point of reference (e.g., coming from the section principal) to the exclusion of the other players nearby. Another type of focusing is described by Chris, a rank-and-file double bass player.

Chris: We hear the least of our own instrument than anyone else, or almost anyone else, because the violins, their instruments are right here [miming violin, points to short distance between fingerboard and ear], the winds and brass, their heads are resonating. Our instruments are all the way down here [points down to bridge], and when another instrument's playing a similar volume, you can't hear yourself at all really. We have little tricks to use [demonstrates pressing ear to neck of instrument, near fingerboard] and you can kind of feel what's going on [motions to body of double bass, just in front of torso].

In this interview extract, Chris describes using a technique of pressing his ear to the neck of the instrument to hear himself more clearly, a technique he frequently used. On one occasion in a rehearsal, during a complex passage involving the whole orchestra, three of the rank-and-file bass players quickly leant in and pressed their left ears against their instruments whenever they reached long held notes. Yet, when they continued to more active parts of the passage, they straightened up and resumed their former posture. The focusing of awareness onto specific objects appears in these instances to respond to the demands of particular musical passages. In this instance, there may have been disagreement among the bassists in the pitch of the long notes. Some of these situations appeared to be anticipated by the musicians, such as during the long note in the bassline. Other occasions when this kind of awareness was employed were in response to unexpected events, such as when “things were not lining up” in the performance. Whether anticipated or not, those moments of focused awareness appeared to occur when the musicians identified and engaged with a smaller element of their activity or environment.

These musicians’ choices about whether to use a more open or a focused awareness appeared to be related to situations where there was either agreement or disagreement among the musical points of reference around them. During interviews, several musicians described using an open type of awareness when a performance was going well and a more focused awareness when it was not. Part of the interviews involved asking the participants to recall a recent occasion when a performance was going well and when it was not going well and to draw a map of awareness for each. The differences between the two maps, for all of the musicians, consistently showed larger areas of awareness when things were going well and, during difficult moments, a narrowing of focus and often also a questioning of what they could see and hear from the musicians around them. Bridget’s map of the “going well” occasion, displayed in Figure 5.1a, is representative of this relationship, showing a large circle that covers the space around her with herself at the centre. On the “not going well” occasion (Figure 5.1b), the size and shape of the field of awareness is markedly reduced: Bridget shows only herself at the centre and strong connections to her immediate neighbours, and the rest of the map has a small number of lines leading to question marks, indicating that those parts of the orchestra are unable to be part of her awareness at that point in time. Allan described a feeling he experiences in a similar state as “hysterical deafness”, an evocative phrase that connotes confusion and panic, and emphasises disruption in the perception of information. He followed this with a description of a sense that there could be conflicting information from his surroundings at such times:

Allan: I feel very exposed, disconnected. It's not the sense of being united and having the connection with the team, but very much the sense of sticking out, the vulnerability, the "where do I fit into this puzzle? I don't feel like I'm fitting, helping this puzzle, I'm just sticking out and I don't fit." So, the flow of information becomes broken and, at times, ignored.

Much of the overt communication examined earlier in this chapter appeared to involve quests for agreement. However, examining awareness in situations where the performance was not going as expected demonstrates how disagreement in performance, or "things not lining up", can cause musicians to distrust and question their musical points of reference. Many of the participants described restricting their focus of awareness, searching for and focusing on other points of reference. This appears to be a way of reassessing who is more likely to have a valid connection to what should be happening in the performance at that moment. In changing their scope of awareness and re-evaluating which of their colleagues they need to focus on, the musicians were engaging in an intersubjective process of questioning and re-establishing agreements about how their collective performance was taking place.

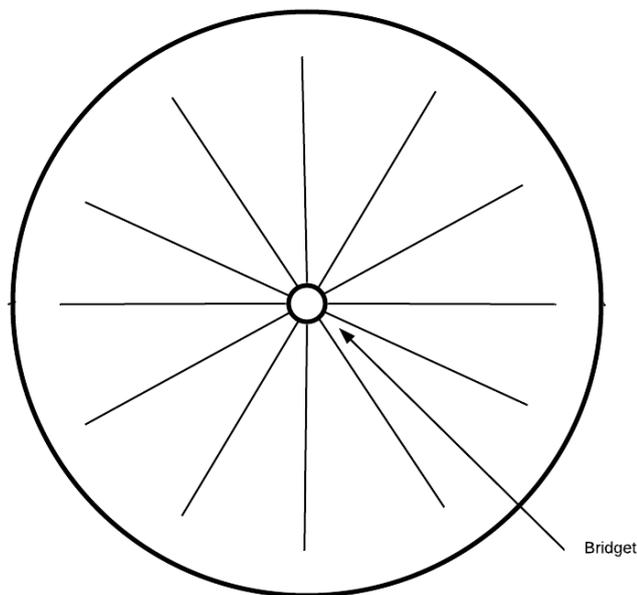


Figure 5.1a. Participant-drawn awareness map: Bridget (Violin), "going well" occasion.

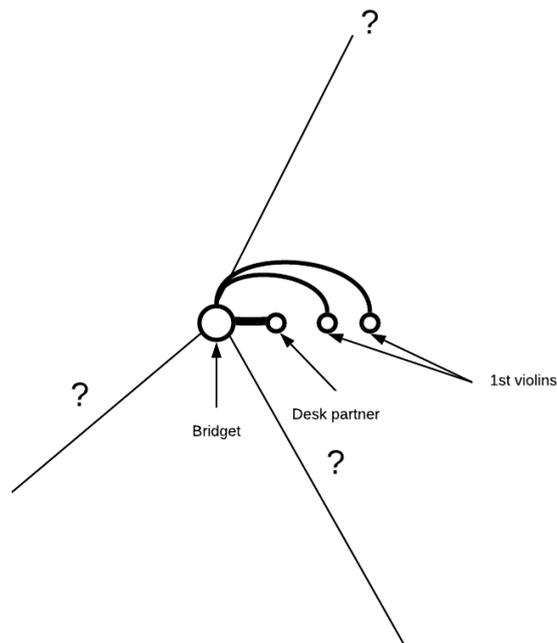


Figure 5.1b. Participant-drawn awareness map: Bridget (Violin), “not going well” occasion.

Awareness that occurred through moving and doing was identified in the musicians’ post-rehearsal descriptions of their performance. This kind of awareness appears to be a close intertwining of perception and action, related to the concept of entrainment, or the coordination of movements in shared action.

Bridget: My whole goal was just trying to have my bow move with everybody else, and that was just my one thing, in the heat of battle.... You start looking out just to kind of grab on to someone, for me it was one of my section principals ... I felt like I was latching onto her.

Here, Bridget describes a focused awareness, but one in which her own bow movements as well as those of another provided the sensorial information for evaluating her own note production. In her description of “latching on” to the principal, it appears there is more occurring than comparing her own actions to those of others to work out whether her playing is ahead or behind. There is also a pace and urgency in her descriptions that suggests she is more than merely reacting to her perceptions of tempo. The action she describes appears to be more proactive, consisting of a combination of both predicting and copying what others are doing so that her movements and note production match theirs as exactly as possible. This mirroring activity incorporates awareness and coordination of bodily movements and can be described as entrainment, or a synchronisation of action, a concept most often studied in relation to rhythmic aspects of action (Large, 2000; Phillips-Silver et al., 2010). However,

there is more at stake in performance for musicians, particularly at an elite level, than just rhythmic coordination. That is, expectations in a professional ensemble context extend to matching sound quality, dynamics, and phrasing to a precise degree (Seltzer, 1975). It is recognised in the literature that entrainment in these contexts must include these more nuanced aspects of performance (Keller & Appel, 2010; Maes et al., 2014; Wing et al., 2014). In this instance, Bridget certainly appears to be referring to rhythmic or temporal functions, such as the movement of the bow with the change of notes, but it seems likely that these were put in focus for the purpose of matching multiple musical aspects of her performance, such as note length and shape. Awareness that comes about through moving and acting, in ways related to entrainment or the coordination of movement, appears to shape these musicians' engagement in their work in highly situation-dependent ways.

As a counter to the demands made on musicians' awareness and concentration throughout rehearsals, the final mode of awareness observed here was one in which the musicians deliberately interrupted their awareness to manage stress and fatigue. The following vignette illustrates how Evan, a percussionist, coped with demands on his awareness through a period of inactivity. During a waltz number in a ballet rehearsal, Evan, who is not playing, is looking to the front of the orchestra at the beginning of the movement, slowly looking around the room at the musicians and the walls. As the piece goes on, he drops his gaze down to the floor for some time. A harp cadenza begins, and he leans over to the traps table, discretely picks up his mobile phone to check it, sits up straight, and picks up a triangle beater as the final chord of the cadenza is played, getting ready for his next entry. Many such observations were made of similar actions, in which the musicians broke their concentration from the orchestra's performance in situations that did not require them to take part. Chronic exposure to both boredom stress and high-performance stress has been identified as a regular and prominent feature of orchestral work (Parasuraman & Purohit, 2000). This might be a persistent strain and fatigue for the musicians over many years of regularly encountering these stressors. The breaks in concentration that were observed appeared to be deliberately timed and controlled, suggesting that they were a practised part of the musicians' performance habits. Interrupting their awareness may very well be a way that the musicians counterbalanced and managed the boredom, strain, and fatigue that accompanies the change between low and high arousal levels.

These orchestral musicians' participation in their work affected and was affected by the quality of awareness in which they engaged. When responding to a larger segment of their activity or environment, they appeared to engage in a kind of awareness that was open

and receptive to a wide range of musical information sources. On other occasions, these musicians directed more focused awareness toward smaller elements of their activity or environment, such as an aspect of their own playing. The specific situations in which they found themselves, such as when there was agreement or disagreement in how the performance was occurring, provided intersubjective conditions for different kinds of awareness. Awareness also arose within movement and activity, as in entrainment or the precise coordination of movement and sounds. The musicians also often interrupted or deliberately dropped their awareness of surroundings when they were able to, possibly in an effort to manage stress and fatigue. Using these different kinds of awareness materially affected the musicians' engagement in orchestral performance, such as how they communicated with one another about performance.

Communication

Communication refers here to the interactions among musicians that involve sending, receiving, and interpreting information. It was found to be a process employed for collective action and was a critical site of intersubjectivity in orchestral performance, in which performance ideas could be conveyed, contested, and negotiated amongst colleagues (Biasutti et al., 2016; Dobson & Gaunt, 2013; Hager & Johnsson, 2009). Three categories of communication were identified, listed in Table 5.3, including vocal communication, non-vocal communication, and communicative non-action. Vocal communication involves using the voice, either verbally (i.e., with words) or non-verbally, such as singing or laughing. Non-vocal communication involves silent interaction, such as facial expressions or gestures, as well as through unvoiced sounds, such as tapping or playing. Communicative non-action is the deliberate withholding of communication, either to limit, stop, or hide interactions with others. Whether overt or subtle, these kinds of communication processes were found to be subject to strong shared beliefs about their appropriate uses in different orchestral contexts.

Table 5.3. *Communication*

Kinds of communication	Example instances
Vocal communication	Commenting on playing (i.e., verbal); Singing passages for demonstration (i.e., non-verbal); Laughing
Non-vocal communication	Playing-related movements; Miming; Gestures; Eye contact; Facial expressions; Posture; Tapping; Leading; Clapping/shuffling feet/showing approval; Showing amusement
Communicative non-action (i.e., deliberate withholding of communication)	Not reacting physically (e.g., to mistakes, to solo performances); Withholding comments/information about attitudes/judgements; Refraining from body movement to make playing gestures clearer

Vocal communication involves using the voice to convey and negotiate ideas, either verbally (i.e., with words) or through other vocally produced sounds such as singing or laughing. Some observed instances of vocal communication in the orchestra include a principal violin player turning around to talk to the whole section about bowing, a first trumpet player quietly singing a passage to the second player to indicate the length of notes and quality of legato to use, and a double bass player making a joke to another about something the conductor said and both laughing. In each of these instances, vocal communication is the means of conveying attitudes towards colleagues or ideas about how a performance should occur. These communications were often accompanied by bodily movement, and they required producing sound for one person to talk or sing to another. However, in the context of an orchestral rehearsal or performance, sounds and large movements can often be considered unwelcome, and unauthorised talking or playing can be treated as an “unprofessional” interruption to the performance in progress. There were several observed occasions when a dropped object, a loud voice in an adjoining room, or an accidentally slammed door attracted immediate and serious attention from many musicians in the room, with heads turned sharply to the source of the noise and frowns directed at the intrusion. This sensitivity to noise within the orchestral context provides an added complication to communication amongst colleagues, in that it demands most communication to occur without sound. It is not surprising then that much of the communication observed was non-vocal, whether or not musicians were playing at the time, to limit noise and movement that might disturb the people and performances in the orchestral environment.

Non-vocal communication uses both silent means and sounds that are already part of an activity to convey ideas or intentions about performance. The musicians were frequently observed engaging in this form of communication, especially whilst playing. This kind of communication was not always silent, as it also made use of tapping or the movements and sounds of playing. Some examples here include brass players coordinating their in-breaths to create a unison attack on the first note of a shared entry, percussionists using torso and stick movements with a similar purpose, and woodwind players using a movement of their upper torso to emphasise together the high point of a phrase. These playing-related movements observed in performance were not all solely for the purpose of operating an instrument: They facilitated collective action within a section, for example, of trumpet players or percussionists, allowing them to coordinate note production and musical ideas precisely. A hierarchical aspect to this kind of communication was frequently observed, as the movements were usually most pronounced in the principal players, an activity known as “leading”

(Biasutti et al., 2016; Ford & Davidson, 2003). This kind of communication may be regarded as more efficient than vocal means in these contexts, as it is likely that many words might be needed to fully articulate the detailed choices of note length and style in even the smallest musical phrase. Non-vocal communications contained in movement appeared to be vital for the musicians to find a way of playing musical phrases in the same way within the noise-sensitive context of the orchestra.

Body language, that is, postures, facial expressions, and gestures, is another form of non-vocal communication used within the orchestra (Biasutti et al., 2016; Ford & Davidson, 2003; Seddon & Biasutti, 2009). These movements were observed to be sometimes large and obvious to many, as in the leading movements of the concertmaster. Alternatively, they could be small and perceptible only to immediate neighbours. The vignette at the beginning of this chapter, describing viola players sharing their amusement over a wrong note, is an example of small and subtle non-vocal communication. Other viola players in front or behind them might have noticed the wrong note, but it is unlikely they would have been privy to the desk partners' (i.e., the pair of musicians sharing a music stand) use of subtle eye contact interactions and facial expressions to acknowledge the mistake. The following vignette is another occasion from the same rehearsal: The conductor makes a musical request to a number of singers on stage and they respond in a way that appears slightly rude. In response, the concertmaster and his desk partner exchange eye contact with faintly raised eyebrows. Upon repeating the passage, the desk partner appears to be unimpressed with the singers' efforts to satisfy the conductor's request and, whilst playing, looks back to the concertmaster with another faint expression that seems to indicate disgust. However, when his look is not returned, he assumes a more neutral expression and looks back to his part. Through this interaction, a combination of facial expressions, bodily posture, and eye contact was used to create an exchange of information between the violinists about their evaluations of the singers' responses. Similar combinations of facial expression and bodily posture were observed to occur on many such occasions between colleagues to perform functions similar to these. These occasions include acknowledging mistakes, expressing confusion, sharing humorous observations, or expressing and sharing positive or negative judgements about the performance of a group or individual. The subtlety of some of the non-vocal actions allowed communication to be limited to the immediate audience of a neighbour. The ability of non-vocal communications to be silent and subtle makes it possible for covert communication and interpersonal exchanges to occur in situations where its participants might not want their expressions to be made public.

Some communications appeared to require the utmost care in how they were delivered and to whom, or indeed whether they were communicated at all. Intense sensitivity to criticism by colleagues is common in the high-performance environment of an orchestra (Brotsky, 2006), particularly given the cultural expectations for near-perfect performances (Seltzer, 1975). This situation requires sensitivity with communications concerning judgements and evaluations or when hierarchical relationships must be considered. The following vignette describes an occasion in which communication around a mistake in performance was particularly difficult. During a run-through of a ballet, a principal brass player performs a high and exposed solo, loudly splitting notes on a few of the harder parts of the passage. The others in the section continue playing without any discernible change in facial expression or posture for some time afterward. Indeed, they appear to keep their eyes on their part and the conductor rather than look around, as they might do normally. The principal player acknowledges the mistake, making an exasperated comment to the second player and shaking his head, and the second player acknowledges the remark with a nod. In this vignette, it appears it was acceptable for the principal brass player to acknowledge his mistake. In contrast, the other members of the section did not provide any demonstrable indication that an error had occurred, perhaps judging that this might be the best course of action for presenting a supportive attitude. This vignette illustrates the point made in the music performance literature that, even in situations when judgements are not musicians' main concern, power relationships within the orchestra shape the possibilities of communication (Brinner, 1995; Dobson & Gaunt, 2013; Murnighan & Conlon, 1991; Seddon & Biasutti, 2009). Many of the situations described in this chapter involve principals communicating musical decisions to members of their section, with the expectation that responses would include assent, acknowledgement, or further questioning. However, it is known that the requirement for highly trained musicians in subordinate positions to repeatedly cede control over artistic decisions to others can result in long-lasting and deeply felt frustrations (Faulkner, 1973b; Murnighan & Conlon, 1991; Sternbach, 1995). These frustrations can manifest themselves as significant stress factors for individuals and disruptors of working relationships (Parasuraman & Purohit, 2000). Given the numerous observations conducted in this study of neutral postures and neutral expressions accompanied by communications of assent and acknowledgement, it does not seem likely that these signs of agreement should be taken at face value. For example, even if the musicians nodded assent to an instruction, this may not mean that they agreed with it or intended to follow it wholeheartedly. In situations that involve either judgements or power relationships, there

appeared to be conventions, clearly understood by the musicians in this study, of what constitutes acceptable and unacceptable occasions for communication.

The final category of communication observed in the orchestra is communicative non-action, that is, the withholding of communication or interaction. Deborah, a principal viola player, was very explicit about how she attempts to maintain neutral postures and body movements to limit what she communicates, as she explained in her interview:

Deborah: I think movement is disturbing for people. I'm quite a restless person, so I've trained myself to sit still.

Interviewer: So, you're aware of what they might be seeing?

Deborah: Yes, because if I move, they might think "Oh, she's doing something" and think they need to know something, so I'm not giving them too much information, physically.

In this interview extract, Deborah indicates she is aware that, as a principal, any of her movements could potentially be interpreted as communication by her section. Consequently, to avoid this, she attempts to minimise bodily movements in general. She appears to be suggesting here that she does this so that when she does intentionally communicate something, it can be detected more clearly. Many observations in rehearsals confirmed that, compared to other principals, she made minimal change in posture and very little vocal communication. Bridget, a rank-and-file violinist, described another kind of non-communication:

Bridget: Well the rule is ... I can't get up and go and talk to my principal, so I would tell someone who's within whispering distance to him, and if you've got a question or comment from third desk it gets passed down. But the player on second desk, she answers most of the questions, or she can see the section principal's part. If it is a really good question, it will go to the principal, and then if it's a *really* good one, it'll go to the concertmaster.

In this interview extract, Bridget indicates that, during rehearsal, direct communication between herself and the concertmaster is rarely appropriate. No mention is made of interacting with the conductor; it seems this might rarely be an acceptable practice for someone in a subordinate role. In rehearsals throughout the observational fieldwork, conductors routinely addressed comments to the violin section collectively or solely to the players on first desk. Responses from the rank-and-file members, if any were made, were small movements representing signs of acknowledgement. These observations suggest that a distinctly neutral expression and posture might be adopted to disguise any hint of

disagreement and possibly also to convey a qualified kind of obedience (Wacewicz & Zywickzynski, 2012). They also suggest that withholding observable interaction does not necessarily mean communication was not occurring on these occasions. Communicative non-action appears to be rather more than just the occasional decision to refrain from overt interaction. Refraining from communication can be a communication in itself. It can also make other communications clearer and can frame entire relationships within the orchestra. The implication here for intersubjectivity is that, although collective action is often negotiated with most input from those in superior roles, the potential remains for divergent ideas about performance amongst colleagues.

The communication described in this section ranges from the overt and public to the highly subtle, and it is subject to a strong shared understanding about which contexts of communication are appropriate or not. In several of the occasions described here, such as frowning at unexpected, “unmusical” noises or choosing not to react to mistakes or contentious instructions, deliberate choices were made by the musicians to follow conventions of “orchestral” behaviour. In doing so, their coparticipation reconstituted and reaffirmed those conventions as shared understandings of appropriateness. All kinds of communication discussed here have an impact on shared practices, values, and knowledges of orchestral activity. The cultural tool of communication is discursive, in that people use it to shape and limit what activities are acceptable (Merriam, 1964, p. 161). With the range of communicative actions extending even to subtleties in how these musicians refrained from responding to certain events, it seems that a sensitivity and awareness to colleagues must be maintained to a highly developed degree throughout rehearsals. From the perspective of information sharing amongst colleagues, the kinds of communication described here appear to shape how intersubjectivity arises and is deployed within orchestral activities. Communicative non-action also holds considerable implications for honesty and trust amongst colleagues (Wacewicz & Zywickzynski, 2012), since it would appear that when these musicians withhold their interaction, they are deliberately refraining from one of the common vehicles of critiquing and contributing to shared cultural understandings of how their collective action should proceed.

Evaluation of Performance

Evaluation of performance, for orchestral musicians, is a continuous process of appraising and making judgements about performance. Musicians can make evaluations regarding themselves, individual colleagues, instrumental sections, or the orchestra

collectively (Faulkner, 1973b; Gilling, 2014; Murnighan & Conlon, 1991). Evaluation is an important process used by musicians in critiquing past or current performances to inform and structure future performances (Bangert et al., 2014). It is considered here to be part of their awareness as they encounter, reconstitute, and make meaning of their experience whilst engaging in their work (Vygotsky, 1997; Wertsch, 1985). Evaluations of performance were observed to occur in two broad contexts, summarised in Table 5.4, comprising (a) evaluations of the musical aspects of musicians' own or others' performances, and (b) evaluations of the professional actions or performance of others in the organisation. Figure 5.2 is a model that expresses the relationships explored so far among awareness, communication, and evaluation. Awareness is put forward here as a process that is fundamentally connected to both communication and evaluation, but whilst evaluations may be communicated, this is not always the case. Whether evaluations are communicated and how this is done impacts on trust amongst colleagues, as socially derived feedback and support is often closely tied to how these processes are enacted whilst colleagues engage in work together. In this study, it was observed that humour was often employed as a way of negotiating the social complications involved in communicating about evaluations. This section explains how evaluation of performance manifested in the activities of this orchestra and how its impact on trust relationships had important implications for performance.

Table 5.4. *Demonstrations of Evaluation of Performance*

Contexts for evaluations of performance	Instances
Evaluating musical aspects of performance	Critically listening to own and others' playing; Deliberately not reacting to others' mistakes; Clapping/shuffling feet/showing approval
Evaluating non-musical professional actions or ability	Commenting to neighbour about quality of rehearsal; Showing annoyance at conductor's directions or management's decisions; Looking for source of unexpected sound

Taking the first context for evaluation of performance listed in Table 5.4, it was evident throughout rehearsals and performances that musicians were appraising and making judgements about the musical aspects of their own or others' playing. This kind of evaluation was often inferred from observations and subsequently confirmed in conversations with the participants. Instances of evaluation include occasions in which musicians were observably focussed on critically listening to their own playing or the playing of others, and this was frequently described as a feature that saturated their conscious engagement with their work.

Chris: Well, the good sound was really huge, that's how it felt, from behind me and in front of me, within my section ... at the same time there's anxiety, because when something's really good and it goes really well for a while, you're like "uh oh, when's it going to not be that?" ... [that thought] is always there, just ready to go.

Chris, a double bass player, describes here that, even when he judges a performance to be going well, he is continually waiting for a momentary change in that assessment. The interview extract refers to a moment-to-moment awareness that was fundamental to his appraisal of what he and his section were doing and his aesthetic judgements about whether it was "good" or not. This example is illustrative of how evaluation could affect these musicians' performance, and it also indicates the high level of value and meaning the practice of evaluation could hold for their ability as musicians.

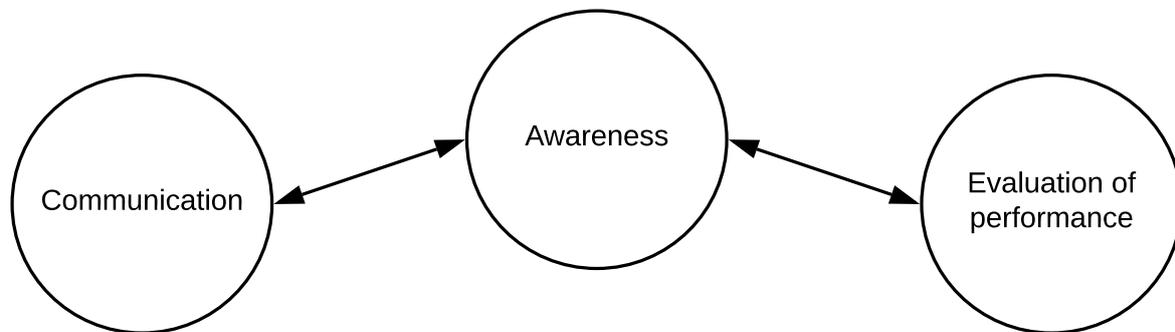


Figure 5.2. Processes of rehearsal.

The second context in which the musicians who were interviewed and observed expressed their evaluations was related to non-musical aspects of orchestral activities. Instances of this kind of evaluation included the musicians making comments to each other about how a rehearsal was being run or how "professional" another's actions were deemed to be. Anyone connected to the orchestra's activities, including conductors, members of management, or the public, could be subject to evaluations of this kind (Faulkner, 1973b). In one instance, a door to the rehearsal studio slammed shut and several musicians in the orchestra immediately looked around the room with expressions of disapproval. This example was used earlier to demonstrate awareness and sensitivity to the orchestra's sonic environment, but it also illustrates the musicians' swift evaluation of the sound as intrusive and describes their public display of their judgement of the "unprofessional" action of allowing the door to fall shut. Whether related to musical or non-musical aspects of orchestral

performance, evaluation was a process employed by these musicians to understand what was going on around them and to form judgements that allowed them to adjust their engagement in the ensemble's activities.

It is advanced here that the musicians' evaluation of all aspects of the orchestra's performance was important to how they maintained awareness of and made changes to their collective activity. Evaluating and making meaning out of experiences has particular relevance to how intersubjectivities arise in the context of work, that is, how individuals constitute and reconstitute their understandings of themselves and their work through coparticipation with others (Billett et al., 2006; Valsiner & Van de Veer, 2000). For orchestral musicians, then, it is not just the production of musical sounds but the whole of their encounters within the orchestra that help create their understandings of who they are and what they are doing as musicians. Thus, it is inferred here that all aspects of these musicians' encounters within their working activities were subject to the meaning-making processes of consciousness. Evaluation, as an agentic and conscious part of creating and recreating understanding, is considered to be part of the continuous process of how intersubjectivity arose as these orchestral musicians engaged in their work.

For these musicians engaged in orchestral performance together, only those evaluations being expressed could be observed and acted upon. This engagement was important to how intersubjectivity arose in orchestral practice because of how it shaped the sharing of information, meanings, and values amongst the musicians. The following vignette describes a situation in which evaluations of a musician's performance were being made by his colleagues but were not able to be shared with him at the time, affecting the outcome of the performance. During the rehearsals for an opera with some difficult brass parts, a casual musician is filling in at the last minute for the regular tuba player in the dress rehearsal. The musicians approach a segment of music that features the tuba and trombones, and the tuba player enters one bar too early and stops after a couple of bars, while the trombones continue without him. He makes two tentative and unsuccessful attempts to rejoin them. The principal horn player turns his head to look in the direction of the low brass as the trombones continue playing. The tuba player looks over at the trombones next to him, but the tempo is fast and they make no attempt at eye contact, do not point out where they are, nor do they lead him in with their playing movements. After the rehearsal concludes and the tuba player leaves, the harpist asks the bass trombone why he did not help the tuba player when it became obvious that he could not find the right bar. The bass trombonist shrugs and says, with a "helpless" facial expression, "well, I just didn't".

This vignette illustrates evaluations being made by members of the orchestra, but not all of them being shared amongst each other. Only the horn player gave an indication at the time that he was aware of the tuba player's errors, even though it is likely that all the orchestra members mentioned in this excerpt, and very probably many more, had also evaluated and identified the problems with the performance. The bass trombone player, sitting next to the tuba, was best placed to communicate with him but chose not to do so. In the absence of this communication, the tuba player remained aware that he was doing something incorrectly but was unable to tell exactly what was wrong or how to fix it. This analysis of the situation is not meant to imply negative judgements of any of the musicians involved: It is likely that the fast tempo and the context of the final rehearsal made communication in the moment unfeasible. It is also quite likely that the trombone players made a judgement that stopping to help the tuba player find his place would interrupt the rehearsal to an unacceptable degree. It is clear, however, that because evaluations were not communicated, those orchestral musicians' engagement together in performance was affected.

Forming judgements was often a part of this process of evaluation, but the communication or expression of those judgements was often exercised with care as they could have complex impacts on performance outcomes and personal relationships. As in the different forms of communication observed, positive and negative judgements could be delivered vocally and could also be communicated non-vocally, such as by discretely shuffling feet to indicate applause when a colleague had performed a solo. As described also in the section on communication, judgements could be withheld, in certain circumstances, by limiting facial expressions or bodily postures (Biasutti et al., 2016; Ford & Davidson, 2003). On other occasions, performance decisions could indicate judgements, for example when the musicians chose to play with one section member over another during disagreement in a difficult performance moment. In all these instances, it is inferred that the monitoring and evaluating in which each musician engaged continually reshaped their interactions and their performance, and the communication of those evaluations contributed to their shared understandings (Bangert et al., 2014). Thus, the intersubjectivity that arose through this shared activity was shaped by each musicians' awareness and evaluation of other individuals' performances within the group. Sharing judgements about colleagues' performances, however, was often not a neutral issue, requiring musicians to negotiate the ethics of trust in both musical performance and personal relationships (Ascenso et al., 2017; Khodyakov, 2007).

In summarising this aspect of rehearsal so far, the evaluation of performance was a process in which the orchestral musicians in this study frequently engaged within their participation in the orchestra's activities. It involved making appraisals of and forming judgements about the performances and actions of themselves and others. This process could be directed towards both musical and non-musical aspects of performances and actions connected to the orchestral environment. Evaluation is understood to be part of the meaning-making that arises from consciousness and is part of how intersubjectivity arises in the orchestral context. Whether and how musicians communicate their evaluations had an important impact on how performance took place and required care in how this was achieved to maintain trust amongst colleagues.

Trust.

Trust is regarded here as an individuals' reliance on another's competence or goodwill. It was identified as an important concept in this study because it was found both to be connected to musicians' ability to perform effectively with others at a high level as well as to affect their well-being. A distinction can be made between "competence trust" and "goodwill trust", both facilitating individuals' abilities to engage in complex coparticipatory activities such as orchestral performance (Khodyakov, 2007). Competence trust relates to the confidence individuals hold in others' ability, also compared here to the medical education term "entrustability", and the findings of this study elaborate how this kind of trust is related to the orchestral hierarchy. Goodwill trust is the confidence individuals have in others' good intentions and this study found collegial support to be important to orchestral musicians' ability to perform well and to their well-being. In sociological literature, trust is frequently presented in a duality with control (Costa & Bijlsma-Frankema, 2007; Möllering, 2005); however, the thematic analyses of the data did not raise issues relating to control and so this concept is not included in the discussion. Trust has recently been identified as an important issue in discussions about professional orchestral performance (Gaunt & Dobson, 2014; Johnsson, 2009; Khodyakov, 2007; Oakland & Ginsborg, 2013), and this dissertation presents new evidence that confirms and elaborates the complex relationships among trust, hierarchy, performance, and well-being.

Trust relating to competence arose as an important way that the musicians in this study could engage in their work with others in the orchestra, with distinct connections to the orchestral hierarchy. The musicians made use of this kind of trust on occasions when they were unable to evaluate effectively the performances of their colleagues while their

awareness or efforts are concentrated elsewhere. This kind of trust can be compared to the term *entrustability*, commonly used in medical education (ten Cate et al., 2015), relating to an individual being trusted to perform a task based on an assessed level of skill and likelihood of exercising good judgement. The following extract illustrates this trust.

Deborah: Do I look much at my desk partner? I don't look at him. I sometimes check that he gets my idea, but otherwise no. It's his job to follow me, so I'm just trusting him, that he does his job, I don't have to look at him.

As a principal player with responsibility for a section of musicians, Deborah, a principal viola player, expresses a confidence in her colleague that means she does not always have to evaluate and assess his performance. Instead, trusting that her subordinate is performing his roles responsively and competently, she describes foregoing evaluations of her colleagues' playing, to a certain extent, so she can be free to turn her attention to other aspects of her activities. In situations like this, trust in section members' skill and judgement appears to be a requirement of a principal's role, as they have responsibilities that extend beyond ensuring cohesion within their own section.

Allan: You sort of do find a groove, don't you, when you've been playing with other people for a while ... also people have a way of keeping all the things that you might do differently in check as well.

This interview extract illustrates how Allan, a principal trumpet, relies on a history of exchanges with his colleagues to form predictions of their preferences and performance habits. Familiarity of this kind has been found to engender trust that enables greater creative risk taking in elite performance (Gaunt & Dobson, 2014; Geeves et al., 2014; Seddon & Biasutti, 2009). In smaller ensembles, it has been argued that sharing performance information beforehand as well as building trust and interpersonal understanding over longer periods of time is crucial to high levels of entrainment in performance (Badino et al., 2014; Geeves et al., 2014; Keller & Appel, 2010). Those studies also found that ensemble power relationships or hierarchies shaped the sharing of information, and this appears to be corroborated here in how the principal players' trust was enacted towards their subordinates.

Entrustability was also a concern for rank-and-file musicians, as those in subordinate roles described a requirement to trust their principal or conductor, whomever they determined to be the best point of reference available to them in a given musical situation.

Bridget: I've got a good view of both the concertmaster and my section principal.... I've got to focus on playing with my desk partner, who's very reliable, and watching the principals ... in the scary moments, that's who I just aim for.

Based on her appraisals of the principals and desk partner, the violinist, Bridget, describes in this interview extract how she trusts those particular people in difficult situations without having to look to another source of authority to evaluate whether they are correct. This kind of trust is especially exercised in “scary” situations where coordination amongst the orchestra becomes difficult. Geeves et al. (2014) have argued that a hierarchy in use by ensemble musicians needs to be accepted by all involved for trust to be built effectively and used in performance. In both cases described here relating to entrustability, the orchestral hierarchy provided a structure that the musicians appeared to use to determine how and when to trust their colleagues and forego evaluations of their performances. It may even be possible that the ways in which orchestral hierarchies are used has developed over time with entrustability being an expected feature of the musicians’ performance and relationships.

Trust relating to goodwill was found to be important because it was directly related to these musicians’ sense of well-being and, indirectly, the social and psychological conditions of their ability to perform. The kind of trust referred to in this context concerns not so much the truthfulness of what is being communicated but the intentions behind the communication, that is, its perceived supportiveness. This kind of trust was found to be associated with musicians’ decisions about whether, how, and when to communicate their evaluations of performances to their colleagues. In one instance observed during a rehearsal of a symphony, Allan was playing with a second trumpet player of a similar age and level of experience. The second trumpet leaned forward with a smile and pushed a pencil, already lying on the music stand, towards Allan, and Allan laughed in response and pushed the pencil back towards the second trumpet player. It appears that Allan had made a mistake and the second trumpet was playfully commenting on this by suggesting he should make a note in his part not to do it again. Pointing out a superior’s mistake could often be an unusual action within this hierarchy, but Allan appears to have appreciated the joke rather than taken offence, as he responded in an equally playful manner.

In another incident with a contrasting power relationship, a principal horn player made an audible and prominent mistake on a solo passage during rehearsal. The second horn player, junior in age and experience to the principal, made no sign by word or body language that she had noticed the mistake until the principal made a comment about it. This comment was accompanied by the principal making a laugh and shake of the head, after which the younger horn player smiled and nodded. In this context, the pressure of the solo performance situation and the unequal power relationship between the horn players may have created an environment where a playful response to the principal’s mistake would be inappropriate.

Such a response might have offended the principal horn's sensitivity about the success of his performance and perhaps be perceived to undermine his authority or confidence. In different ways, both reactions are interpreted here as having been successful in creating a supportive environment towards the musicians who had made mistakes. It appears that the conventions and practices these musicians used to decide whether communication was appropriate were often calculated to enhance trust by supporting, demonstrating goodwill, or helping their colleagues or, at the very least, by avoiding undermining them or their feelings about their performance.

In less supportive environments, the relationship among trust, well-being, and the communication of evaluations can impact musicians' well-being (Ascenso et al., 2017). Kingsbury (1988), in his account of the concept of musical talent, argued that evaluations of musical performances can take on the solidity of becoming social facts, that is, they do not only happen in the moment, they are also discussed or ruminated upon afterward to become part of a larger conversation. For the individual musicians, evaluations expressed by others could take on a distinct personal reality, as described by Allan in this interview extract:

Allan: We get told nine good things about our playing and we get told one bad thing about our playing and then our focus becomes that one bad thing, becomes 100% of who we are.

However, larger conversations do not necessarily include everyone in a social group like the orchestra, as the act of withholding evaluations causes individuals to be excluded from those conversations. This is evident in the way conductors were frequently and freely critiqued, praised, or mocked by members of the orchestra outside of the conductors' hearing. It can be imagined that, in any workplace, those criticisms could never be expressed directly to an individual in a position of authority without serious consequences. Similar exclusionary conversations were also likely to have been carried out around one study participant during a "pre-trial" audition contract in one of his previous orchestral jobs. This is described in the following interview extract, although his identity is further concealed for the purpose of discussing this sensitive topic:

Participant: Everyone was saying "you'll get it, they've wanted you, you've basically been in the job for 10 years, they love you, this is their chance to give it to you", and they gave it to the other guy, which was completely heart-breaking ... I actually still haven't spoken to anyone from the orchestra.

Despite receiving encouraging predictions and no complaints from his then colleagues during the pre-trial contract, he was nevertheless passed over for the appointment, presumably based

on critiques to which he was not privy at the time. This ultimately affected his personal relationships with colleagues and his subsequent experiences of work and livelihood. From occasions such as these illustrating less supportive environments, it appears that maintaining effective personal and working relationships between orchestral colleagues required a level of trust in others' intention to provide support. However, the frequent requirement to evaluate others' performance sometimes produced fragile conditions for the development of that trust.

Goodwill trust refers to musicians' intentions to support each other or work together in good faith, but it does not necessarily refer to the truthfulness or otherwise of the evaluations expressed. Instances of critical or light-hearted evaluative comments and observations were part of a regular way for the musicians throughout the orchestra to interact at work. Some examples of this kind of communication include acknowledging mistakes, joking about conductors' methods or interpretations, showing approval by quiet applause or shuffling feet, and showing disapproval by shaking the head or grimacing at poor group performances. If there were sometimes truthful critical evaluations that musicians kept to themselves for the sake of preserving relationships, there were also occasions when those critical evaluations were made part of the daily conversation in ways that proved detrimental to relationships.

Participant: Your confidence I think naturally, over the course of a career, gets beaten down ... every time your principal turns to you and says "you've been a bit sharp all day today", you sort of go... [gulps, grimaces] a little bit more. So, I think it's just natural that when you come out of college ... you go on thinking you're amazing, and then all these things happen that show "actually, no" [short laugh].

The interview extract here describes this participant's perceptions of and reactions to the criticisms of a principal player. It would not be unusual for a principal to criticise the playing of a section member, given that the conventional orchestral hierarchy and negotiations of power over artistic and technical decisions are part of those musicians' daily experience (Faulkner, 1973a; Murnighan & Conlon, 1991). The point is rather that, despite being part of this principal's remit and regardless of the truth of the evaluation, the section player in this interview extract describes experiencing these communications as undermining of self-confidence. Whether it affected her personal relationship with the principal, belief in her own playing ability, or subsequent ability to perform, it appears to have compromised to some degree her trust in being able to work as an effective member of the group enterprise. The apparent cause of this lack in trust is not the truthfulness of the communication – its veracity appears to be taken at face value by the participant – but rather its perceived unsupportive

criticism. This instance illustrates how support, offered in some other way than a frank appraisal of performance, could be more highly valued than truthfulness, particularly in the contribution it made to the performers being in an environment where they felt they could take risks and perform to their full ability.

The prevalence of performance-inhibiting injury and mental health problems in orchestras also contributes to limitations on musicians' performance ability and well-being (Dobson, 2010a; Fishbein et al., 1988; Kenny & Ackermann, 2013; Sternbach, 1995), and the quality of goodwill trust in these situations can be influenced by how evaluations are expressed. A lack of goodwill trust amongst colleagues is known to impact on whether musicians seek help for physiological and sociopsychological problems (Ascenso et al., 2017; Gembris & Heye, 2014; Rickert et al., 2014b), leading to untimely clinical interventions and detrimental outcomes on musicians' effectiveness in performance. Orchestral musicians experiencing injury or illness have described feeling judged by colleagues and can experience social isolation (Guptill, 2011; Rickert et al., 2014b), suggesting trust in collegial support can suffer in these circumstances. Clearly, whether negative evaluations are expressed in this situation or merely anticipated, musicians can experience negative effects on their well-being through a perceived lack of support or trust from colleagues.

Trust relationships in an orchestral context can be complicated further by a cultural requirement to hold high professional standards for elite performance (Dobson, 2010a; Watson & Forrest, 2014). Occasionally, orchestral musicians are asked to become members of panels that monitor trial periods for new members and make decisions on tenure appointments. Such panels are often made up of musicians who have worked closely with the candidate under review and who may have known them only for the length of the trial or sometimes for much longer. As in the instance discussed earlier of the participant who experienced disappointment, the requirement for colleagues to communicate their evaluations of an individual's performance throughout a trial can present a danger of compromising and confusing both working and personal relationships. During everyday communications, individuals must also make decisions about how much they convey of their honest evaluations of colleagues' performances. Farkas (1976), in his didactic treatise for would-be orchestral musicians, exhorts them not to turn around or be too open about watching someone play a solo, especially if mistakes have been made. Instances of restraint in this kind of communication, or communicative non-action, were described earlier in this chapter. Non-verbal communications, including body language and facial expressions, are frequently evaluated as having a high truth reliability, or a high likelihood of honesty, because they are

most often assumed to be involuntary (Wacewicz & Zywicki, 2012, p. 126). However, the deliberate control the musicians in this study exercised over those signals to suppress them indicates the possible existence of deception as an occasionally necessary part of their coparticipation. In all of the situations described in this chapter, trust had a complex relationship to honesty and deception, and the musicians found themselves having to deliver evaluations using indirect methods such as humour to extend and receive collegial support.

To summarise these findings on trust, both competence trust and goodwill trust impact on how musicians coparticipate in professional orchestral performance. The musicians in this study made use of competence trust, or entrustability, to allow them to forego evaluating their colleagues' performances, particularly in situations when there were other priorities for their attention. Principals described trusting subordinates to follow effectively, while rank-and-file players described trusting principals to be accurate points of reference to follow in performance, suggesting that the orchestral hierarchy has developed over time based on these manifestations of trust. Choices about whether, how, and when to communicate evaluations of colleagues' performances could affect goodwill trust in both positive and negative ways by contributing to the supportiveness of the environment. This environment could have both positive and negative effects on the musicians' well-being and ability to perform effectively with their colleagues. Perceived support, rather than truthfulness, appeared to be more valuable to maintaining trust, which could affect the ability of the musicians to take creative risks in performance. Lack of goodwill trust may also prevent musicians from seeking timely help for physiological or sociopsychological problems (Gembris & Heye, 2014; Rickert et al., 2014b), and this is likely to affect negatively their well-being and future ability to perform. Overall, complications in working and personal relationships can be created by communicating evaluations, especially when musicians are required to do so to uphold high artistic standards. Thus, conflict-avoiding methods, such as humour, were found to be useful in everyday communication. Whilst these different forms of trust have been explored in elite music performance environments (Gaunt & Dobson, 2014; Geeves et al., 2014; Johnsson, 2009; Khodyakov, 2007; Seddon & Biasutti, 2009), the findings presented here are put forward as new evidence and detail of how trust was manifested within the processes and hierarchies of a large professional orchestra and how it affected the musicians' well-being and ability to perform.

Humour.

Humour is known to be used by musicians as a “social lubricant” and process of intersubjectively sharing values and beliefs (Cottrell, 2004, p. 133), but its use in relation to evaluative processes and trust in orchestral performance is elaborated in detail here. Despite being a prominent feature of orchestral life, humour has received very little attention in most research on orchestral performance apart from mentions of its use as a coping strategy in difficult experiences (Pecen et al., 2018) and for enhancing social cohesion (Johnsson, 2009). Cottrell (2004), who proposed that this lack of research may be because humour is often seen as incidental to musical activities, nevertheless elaborates how it is an important way of sharing beliefs about identity and belonging among musicians. He argued that it can be a strong social tool in deflecting criticism, can act as an antidote to fear or nervousness, and can enact social control by “screening” newcomers to a group. In addition to these functions, humour was found here to be an important way of moderating the difficult task of communicating evaluations of performance to others.

Humour, jokes, playful interactions, and laughing were commonly employed alongside evaluations in communication amongst the musicians observed and interviewed in this study, providing a means of ameliorating critical intentions or minimising seriousness in what could be a high-pressure performance situation. Laughing after making an evaluative comment was frequent, both during rehearsals and in subsequent interviews, and could act as a signal not to take the comment too seriously.

Bridget: I still don't think either one of us was sure what was going on there, but we have all day tomorrow to sort that out [laughs].

In this interview extract, Bridget is communicating an evaluation that holds a deliberate ambiguity: She may be criticising herself and her desk partner for not being in command of the workload at that point, or she may be criticising the conductor and orchestra at large. Either way, her laugh suggests that this criticism should not be taken too seriously, as the performance will be improved on the following day.

Evan: The first gig I ever did ... the only thing I remember was I came in maybe 32 bars too early in the Bolero [laugh], but I was third snare drum, so it didn't really matter.

The percussionist, Evan, is conveying here an evaluation of his own performance, presenting it in a self-deprecating and light-hearted way. Cottrell (2004) noted that musicians often initiate self-deprecating humour about their own mistakes or weaknesses as a way of deflecting criticism by “getting there first”. The inclusion of humour or laughing in these

examples appears to be a kind of evaluation in itself, signalling to others that its subject is an appropriate topic for light-heartedness, as well as for deflecting serious criticism.

Expressing humour, similarly to expressing evaluations, was controlled by the musicians' perceptions of what was appropriate within the social and organisational power relationships of the orchestra. Most of the publicly made humorous observations and playful interactions were initiated or made permissible by those with more authority in the orchestra, such as principals or older members. The contrasting observations of the principal trumpet and principal horn, described earlier, provide examples of different contexts for evaluations and humour. The performance mistake made by the principal trumpet was not publicly obvious, and the second trumpet, of a similar level of seniority to the principal, felt it appropriate to act jokingly in this situation. The mistake made by the principal horn on the other occasion, however, was more prominent and the second horn player, younger and not a permanent member of the orchestra, chose not to acknowledge an evaluation at all, leaving it to the principal to introduce humour with a laugh. By carefully determining whether it was appropriate in these situations, dependent on what was occurring in the performance and who was involved, humour was either included or left out in a manner that reinforced collegial support.

The pairing of humour, joking, or laughing with evaluations was an important way of mitigating the potential for conflict or offence. In other words, it was a way of communicating an evaluation but "softening the blow". On one occasion observed in rehearsal, a timpani player accidentally let some paper loudly fall onto the drum during a clarinet solo. The bassoonist turned around sharply, frowned, and then laughed. The timpanist lifted his arms up, as if pretending to stretch, jokingly denying involvement in the interrupting sound. The evaluation expressed by the bassoonist through his actions, that the loud noise should have been avoided or prevented, was softened by the subsequent playful interaction, perhaps serving to mutually reassure each other of their goodwill. The following extract provides a different example of the use of humour.

Musician 1: [During ballet rehearsal, while conductor is talking to dancers] Can we rehearse the orchestra things? As this is an orchestral rehearsal?

Musician 2: [Turning around, frowning] It's a *stage* orchestral rehearsal.

In this extract from field observations, even the first musician's use of sarcasm, with its slightly more aggressive evaluative connotations, is still a form of humour that is being used here as an indirect and conflict-avoiding method. As noted by Kotthoff (2006, p. 11), there are "sharper forms of critique" available than irony and sarcasm in the high-performance

context of professional orchestral performance and, while this is not a friendly interaction, it still allows the musicians to express conflicting expectations of how the rehearsal should proceed. It appears from these observations that these musicians used humour, playfulness, and laughing to communicate evaluations that might otherwise have been considered too rude to be stated as a matter of fact, helping to maintain collegial support and trust.

Humour or laughing not only imparted a modification of tone to communication between these orchestral musicians; it also conveyed information about the musicians' states of mind, moods, or attitudes.

Participant: Your confidence I think naturally, over the course of a career, gets beaten down, so I was never going to be how I was in [the past] And a colleague has commented on that. He was like "Your playing used to be so ballsy" and I'm like "Yeah, but I had never had a horrible disappointment, you know?" [laughs].

The use of colloquial expressions and subsequent laugh lends this statement a self-deprecating tone. It also appears that this participant wishes to convey that, despite the reference to complex and serious topics, her attitude is relaxed, even flippant.

Participant: There were different circumstances that affected me maybe that day, I think I was just a bit... let's say people were asking questions that they shouldn't ask [laughs] ... there's always going to be people that are out there to further their own [agenda].

The laugh in this instance casts a less mirthful tone, perhaps imparting a note of cynicism or bitterness to his attitude, which, by inference, is extended to his appraisal of those colleagues who ask "questions they shouldn't ask". Imagining these extracts without the appended laugh highlights how the utterances could easily take on much more serious or critical tones, for example, coming across as being miserable or threatening. Without the laugh, these criticisms of playing and conduct might be too much for their colleagues', or indeed their own, sensitivities, given the players' emotional vulnerability in a high-pressure environment (Parasuraman & Purohit, 2000; Sternbach, 1995). When laughing or humour was included with an evaluative comment, it often served to convey extra information or to lessen the likelihood of negative emotional reactions.

Through the examples provided in this chapter, it is apparent that there is often a need for orchestral musicians to maintain trust with each other by observing a balance between expressing or negotiating expectations for performance and being sensitive to colleagues' well-being. When communicating about evaluations was a necessary part of these orchestral musicians' work, for example, by principals who had a responsibility for the performance of

a whole section, musicians typically faced a situation in which the recipients of the communication were highly sensitive to criticism. The cause of this sensitivity could include anxieties related to the high-performance environment of professional orchestras (Brodsky, 2006; Dobson, 2010a) as well as the desire of highly skilled musicians who occupy subordinate roles not to have their artistic authority undermined (see the "paradox of the second fiddle", Murnighan & Conlon, 1991). It was observed in this study that humour was often used by musicians to pass on the evaluations they made in a non-threatening or non-confrontational manner, allowing the musical authority of principal players to be exercised and for subordinates to express their expectations of the orchestra's performance more freely. In this sense, humour can be argued to have been a crucial tool in the negotiation of performance practices for these musicians, whereby, through praise or criticism, new or subordinate members of the orchestra could have an impact on the larger cultural practices by contributing their ideas about performance to the group.

Criticism, often in association with humour, played an important role, not just in providing feedback on specific performances, but also in negotiating and reinforcing intersubjective expectations of good performance. The use of mockery to criticise musicians who were not present, as in the examples provided by Cottrell (2004), was not encountered in the direct course of this study, possibly due to the participants' caution against any such interactions being reported as part of the research. However, the exception to this was regarding conductors, who were a constant target for criticism from musicians of any seniority. The ubiquity of this kind of criticism has been described as a proxy for the musicians' perceptions of the general success of the performance (Faulkner, 1973b). For example, during a rehearsal that was generally judged by musicians in the greenroom to be going well, one trombone player turned to another and said "... this guy's great ..." to which the other nodded and replied "yeah, so long as you don't look at him". The latter trombone player appears to be sincere in his positive response, despite appending a criticism of the conductor's technique. Criticisms can also be directed towards aspects of performance more within the musicians' control, indicating areas where differences of practice are being negotiated.

Participant: In other orchestras, you don't need to speak out, you don't need to put [your thoughts] into words. I think it's a bit of an attitude of, I don't know, English-speakers in general? You could actually just point, raise your eyebrow ... you could solve a lot of problems. I think that's a kind of cultural thing, so maybe you can't

control it so much [laugh].... [Body language] makes much less noise, but somehow people don't do that here [laugh].

The musician in this extract is expressing a criticism in a light-hearted way, but it is essentially still a criticism of how orchestral work is generally conducted in Australian, anglophone orchestras. Her expectations and ideas about how orchestral performance practices should look are clearly articulated here as coming from a different orchestral and national culture. Should she express these different expectations through actions, suggestions, or criticisms, she has the potential to challenge practices that might otherwise be tacitly assumed and practised by her new community. Intersubjectivity in orchestral practice arises through just such person- and situation-dependent events as these: agreements, differences of judgement, and compromises, all of which can be negotiated in ways that attempt to steer the group's performance towards a particular outcome whilst still maintaining trust between colleagues.

Negative situations surrounding trust amongst orchestral musicians have been explored in this chapter in greater detail than positive situations, which may create the unintended impression that experiences in the orchestral environment can be predominately negative. Although it is certainly possible for individuals to have a largely negative experience in a workplace, this is not intended to be the implication of this thesis. However, the issues that can arise from negative trust situations described here can affect well-being and livelihood in ways that are significant in the lives of many musicians. Perhaps this emphasis on negative experiences or consequences should be treated as a reporting bias, that is, positive and "business-as-usual" situations are reported less frequently or in less detail. The variety and complexity in how humour is employed in orchestral life might be interpreted as both a relief from and a method of influencing the serious consequences that musicians can experience in elite performance.

Humour, jokes, and laughing have been found to be used by the orchestral musicians in this study to moderate the difficulties of discussing evaluations about performance. They negotiated the appropriate use of humour through the social and musical hierarchies and relationships, often in a way that was intended to demonstrate support to colleagues and to maintain goodwill trust. Humour was an important method of minimising the potential for offensiveness or of avoiding conflict when evaluations were being expressed. It also provided more nuanced information about individuals' states of mind and could modify the tone of their communication. When sensitivities about performance were present, humour's potential for conflict minimisation helped those negotiations of practice. It also assisted individuals to

express conflicting opinions and still maintain a supportive environment, allowing the musicians to contribute to intersubjective expectations of how rehearsal occurred within the expectations of social and orchestral hierarchies. As a way of regulating trust amongst orchestral colleagues, it is advanced here that humour is an important aspect of communication that ultimately impacts their well-being and performance, even if it appears peripheral to performance activities.

Acting Like a Professional Orchestral Musician

Acting like a professional orchestral musician is an aspect of performance that refers to how musicians understand and enact appropriate behaviours and how they influence others in an orchestral workplace. Although seemingly furthest removed from playing activities, this process is also part of the intersubjective negotiation of how orchestral performance occurs (Gaunt & Dobson, 2014; Johnsson & Hager, 2008). Table 5.5 describes instances of acting like an orchestral musician that were observed in rehearsal and performance, some of which belonged to conceptions of “professional” workplace conduct, whilst others were related more to informal relationships. The professional behaviours, such as arriving for work early or just on time, preparing equipment, or being on break time all have a common theme of personal responsibility, that is, they are mostly about professional issues of conduct such as punctuality and preparation. The “informal” behaviours, such as chatting light-heartedly or seriously about work matters and colleagues and other kinds of “banter”, are more to do with the messy and casual world of personal relationships, emotions, and wider social interactions (Cottrell, 2004). Like the other aspects of orchestral performance, they are open to evaluation, critique, and negotiation amongst the members of the particular community (Merriam, 1964). Both types of actions can have an impact on orchestral performance and the experiences of being a professional orchestral musician as they are a crucial way of contributing to intersubjective understandings of what people should be doing in a professional orchestra and how.

Table 5.5. *Ways of Acting Like an Orchestral Musician*

Ways of acting like an orchestral musician	Instances
Being professional	Arriving early for rehearsal; Arriving just in time; Adjusting seat/stand/personal space; Being on official break time; Leaving when not required
Being informal	Chatting while waiting for work activity to begin; Making light-hearted comments to neighbour; Complaining about conditions; Telling anecdotes or jokes about other musicians (e.g., mutually known or famous)

Actions that are associated with professionalism by these orchestral musicians were connected to a variety of attitudes about what was appropriate in arriving at, engaging in, and leaving a rehearsal. Leaving aside some of the many musicians' definitions of the term "professional", as explored elsewhere (D. Bennett, 2008; Cottrell, 2004), its primary use by participants in this study referred to adopting serious attitudes and approaches towards work activities. This usage can be observed in this extract of an interview with Allan, the trumpet player, in his appraisal of his time working in another semi-professional orchestra:

Allan: It was very mixed as far as attitudes, so it was a mixture of sort of semi-professional players doing it for a bit of extra money and basically a hobby, and then people like myself who were ambitious to do better, to get better jobs but were trying to take it seriously So, you'd have half the orchestra turning up having not looked at the music and the other half of the orchestra who were prepared.

Field observations of rehearsals revealed different ways that the musicians could "take rehearsals seriously" and express professionalism. For example, some musicians in the orchestra demonstrated professionalism by arriving at the studios over an hour before rehearsal began, warming up, practising, and having time for a cup of tea. Others expressed professionalism by arriving at work around 10 minutes before the rehearsal start time, unpacking, sitting down in an unhurried way, and beginning the rehearsal confidently with a minimum of public playing beforehand. This is not to say that they had not warmed up or practised elsewhere before arriving, as this was certainly the habit of some participants. These two examples of ways to arrive at work gave the appearance of demonstrating similar notions of professionalism – that they were prepared for the day's work. However, each way was accompanied by signals of different attitudes. Arriving early seemed to be a way of not only making sure to be prepared in good time, but also being seen by others to be prepared in good time. Musicians arriving just in time appeared to work deliberately against expectations that they should be seen making their preparations. Instead, those musicians appeared to suggest that their level of preparedness and serious approach should be judged on their performance in the rehearsal alone. This was occasionally witnessed in observing some principal string players arrive minutes before the commencement of rehearsal but leading confidently from the first note, or in some brass players declining to take part in the tuning note that occurred at the beginning of every rehearsal. Implicit in these actions were demonstrations of the musicians' competence, responsibility, serious attitudes, and confidence in their ability.

Not every orchestral activity was deemed by the musicians to be of high artistic value, and preparation efforts were curtailed to correspond to the perceived worth of an activity.

Evan: One of those gigs, you rock up and there's mountains of music for one player ... I was grateful that the musical director, he said to just have some fun and just choose whatever you want to play, and that's what I did.

In the case described in this interview extract of a concert accompanying a pop singer, full and detailed preparation of the parts was not entered into and not expected by the conductor. The cordial agreement to this approach recalled by Evan indicates a shared understanding of an appropriate level of effort corresponding to the task. It also implies an assumption granted by the conductor that Evan would prioritise the parts appropriately and trust that they would be performed to a high standard. It appears here that the adoption of professional attitudes and approaches not only affects what is performed, but can be a site of intersubjectivity, especially when the boundaries of what is deemed professional are negotiated amongst musicians.

Interactions that might be colloquially referred to as “informal”, that is, to do with relationships amongst people and not strictly related to acts of working, were another way that the musicians in this orchestra negotiated and co-constituted subjectivities as musicians. The following vignette describes a rehearsal in which some of these musicians were passing the time whilst waiting to play their piece, demonstrating the soft boundaries between professional and informal topics. The morning's rehearsal begins with a piano concerto. Some members of the woodwind and percussion section are not required for this piece, but they arrive at the beginning of the rehearsal anyway as they are scheduled to join in for another piece afterward. As they arrive, they remark about how they might regret arriving early if it turns out they have to wait long. They then sit together in the greenroom and talk about the difficulties of traffic and parking and how it affects their time for warming up and teaching. After 30 minutes of waiting, they make discrete comments about the conductor's methods and affectations. After an hour passes, the group discuss the practice of paying casual musicians for an entire rehearsal call, even if they do not end up playing at all. Some doubt that the practice will be able to continue due to funding problems and others say that it could not happen any other way if the orchestra expected them to miss out on other work. They also discuss other contract-related topics, such as applying for leave to play with other orchestras, all with a mixture of complaining and supportive views being expressed on the merits or otherwise of each incident. One percussionist relates a humorously cynical story

about an overseas holiday being interrupted by his leave being revoked. A woodwind player receives a text message from her colleague inside the rehearsal informing them that they would not be required for the rest of the rehearsal as they were continuing with the concerto. The group stays for another 10 minutes while the manager confirms that this is the case. They make funny or sarcastic comments to each other about having their time wasted or enjoying the break. The manager confirms that they are free to go, and some leave and others decide to wait around for the afternoon rehearsal.

Chatting, humour, playfulness, and complaining are a few instances, described in this vignette, of informal activities that surround the musicians' constitution of themselves and their relationship to their work, and there was frequent crossover between professional and informal topics. Discussions amongst these musicians easily switched between personal experiences of work and non-work events, statements about how orchestra rehearsals should occur, jokes about current practices, and complaints about ongoing conditions. For example, comments about arriving with plenty of time lead to predictions about whether they would have to wait long, how long it took them to arrive, and whether their current experiences of driving in traffic were good or bad. The length of time they were waiting prompted discussions about the good and bad points of the casual musicians' contracts, followed by the good and bad points of the permanent members' contracts. This conversation took place largely for the purpose of passing time, and was filled with a variety of stories, funny comments, complaints, and debates in a style that might be characterised by the colloquial term "banter". Time-filling conversations such as these, however, were the primary interactions observed in which these musicians discussed their relationship with orchestral work, workplaces, and working conditions. Joking, complaining, making statements and rebuttals, and contributing contrasting anecdotes were all activities that made statements to colleagues about personal attitudes about and understandings of their work. In an orchestral context, they positioned the contributor to others as being an orchestral musician with a particular kind or level of experience. Importantly, these conversations allowed colleagues to contest those statements by correcting, rebutting, providing alternative views, marginalising, or silencing the contributions of other musicians. These informal interactions were a key site of intersubjectivity for orchestral musicians, particularly regarding their subjectivities as musicians belonging to a professional orchestra, because it is where their subjective understandings of work were shared, confirmed, and contested (Eteläpelto et al., 2013; Evans, 2007).

For both informal and professional ways of acting as a musician, the intersubjectivity that arose through coparticipation in these activities provided occasions for changes in the musicians' understanding of themselves and their engagement in their work. Putting forward a statement and having it countered by another musician with a different experience or hearing a more senior colleague express an opinion with an air of certainty were common occurrences. They were also opportunities for the musicians to reconsider and perhaps reconstitute their understanding of what being an orchestral musician could entail. The following two extracts from an interview with Allan demonstrate different ways of responding to those opportunities, one agreeing with the thoughts expressed in conversations he had been part of and the other finding a disagreement.

Allan: They probably don't even know it, but a couple of trumpet players that I worked closely with talked a lot about percentages and perspective, and I remember them talking to me about that years ago, and I was just like "yeah, whatever, if I split one note I'm devastated" ... but it's really sunk in now.

This first example shows him initially disagreeing with comments made by colleagues about a certain kind of attitude to their performance, but later, with his own experiences and reflections, coming to adopt that attitude himself.

Allan: For me, performing is very emotional, and I know it shouldn't be. I've read so much stuff that says it shouldn't be.... It's very much about trying to convey an emotion, or some meaning, or a story, and I just cannot separate that, try as I might, having heard from great trumpet players that I should, but I don't care.

This second example contrasts to the first, showing how he may have given careful consideration to adopting an emotionally disconnected approach to performance with others, as advocated by voices of some authority. However, in light of his own experiences and reflections, he eventually decided upon taking a different attitude to orchestral work. The excerpts demonstrate two important points: (a) that the comments made by colleagues in conversations long past can still be accorded great importance by an individual, and (b) that those voices are one among a number of sources that shape individuals' understandings, personal experiences in performing being another. The influence that these interactions appear to have had on the musician in these instances is an example of how coparticipation, or the reciprocal interactions individuals have with each other and work practices, can shape development (Billett, 2002b). It is possible to see here that changes in attitudes or approaches to work were influenced by the casual conversations with colleagues that allowed sharing of statements about the musicians' relationship with their work.

The actions and interactions described in this section occurred within the context of being performed by orchestral musicians in and around their workplace. Individuals' participation in and enactment of both informal and professional roles has been argued to engender the gradual awareness and embodiment of procedural knowledge within their workplace (Billett et al., 2006; Chaiklin & Lave, 1993; Wenger, 1998). Thus, changes in these musicians' understandings and practices, that is, their learning and development, can be seen as part of their participation in these interactions that occur around orchestral work. As they enter into those practices, musicians continue, control, and adapt them to their own personal ends (Cottrell, 2004). For the musicians in this study, their subjectivities, that is, their sense of self, are considered here to be mediated by and to arise out of participation in these professional and informal actions, providing conditions for their changing understandings of who they are and what they are doing as musicians.

This section has given an account of the different ways in which the musicians of this orchestra engaged in acting like professional orchestral musicians, and how they developed understandings of orchestral practices, attitudes, and values. Engaging in professional ways of acting in orchestral work allowed musicians to exhibit and negotiate their notions of competence, responsibility, and serious attitudes towards performance. This serious approach was not expressed in uniform ways across the orchestra, and it was also subject to change depending on how valuable or worthwhile a performance situation was understood to be. Engaging in informal interactions was also an important way of intersubjectively negotiating understandings of and attitudes towards orchestral work. Both informal and professional ways of acting could have individual and social influences, as well as important ongoing impacts on musicians' changing understandings of themselves in relation to their work. These changes in understanding occurred through musicians' participation in the sharing, confirming, and contesting of practices, attitudes, and values, similar to the negotiation of their practices in performance.

Playing Intentions

Playing intentions are effortful audiations (i.e., mental creations of sound) for use in immediate or future performance, and their technical description here is put forward as an original contribution to the literature on this topic. These mental creations can be rich in detail and musicians constantly form and reform them to incorporate their ongoing awareness and anticipation of the orchestra's performance (Brodsky et al., 2003; Gordon, 2007; Seashore, 1938/1967; Trusheim, 1991). It is proposed here that playing intentions are used by

musicians to manage the complex processes of perception and action involved in projecting, monitoring, and adjusting their performance in the orchestra. The formation of playing intentions was a category of process that arose from thematic analyses of interviews and was corroborated through observational inferences and further participant discussions. Two ways of focusing on playing intentions are described in Table 5.6; (a) through personal means of sensory awareness, and (b) through interpersonal means of interactions with others, such as colleagues or the conductor. Playing intentions are considered here to be important to how musicians engage in orchestral performance as they provide an explanation of how musicians co-constitute and enact their performance together in an immediate and flexible way.

Table 5.6. *Demonstrations of Focusing on Playing Intentions*

Ways of focusing on playing intentions	Instances
Personal: through sensory awareness	Focusing solely on own part and excluding other sounds; Miming or mentally rehearsing own part while others are still performing; Studying others' parts; Attending to problems noticed on last run through
Interpersonal: through communication	Discussing instructions with colleagues; Verbally clarifying with colleague what was wrong with playing; Studying the part in response to conductor/principal comments

Playing intentions appeared to be formed by the musicians in this study through both personal and interpersonal processes, making use of many sensory and social sources of information available to them. Table 5.6 gives instances of typical observations made in rehearsal and performance in which the musicians appeared to be engaged in the development of playing intentions. Some instances, such as miming or studying the part whilst others were playing something else, relate to mostly personal actions. That is, they appeared to be enacted through individual musicians' own mental efforts or through individuals' use of their own body and sensory engagement. Other instances, such as verbally clarifying with a principal how the section should play a passage, had clear interpersonal antecedents. In these instances, communication amongst colleagues contributed to the sharing and shaping of collective ideas of how a performance should occur. This is certainly not to say that playing intentions are formed exclusively in one way or another, as there is the potential for contributions from both personal and interpersonal sources in any of the given instances. Musicians negotiating to arrive at a shared idea for performance must still enact their own individual mental representations and use their own sensory understandings to develop their own intentions for performing with the ensemble. Even when these musicians appeared to be focusing solely on their own part and playing intentions, there is still the

possibility that they were making use of their previous interactions with others to develop those intentions (Trusheim, 1991). Thus, the presentation of two categories here is not meant to divide the enactment of playing intentions into one group or the other. Rather, they describe the personal and interpersonal aspects of the same fundamental process of forming and reforming playing intentions.

Playing intentions were commonly discussed in relation to awareness during performances, where it was notable that these discussions referred to an active quality of mental process.

Interviewer: [Sitting in front row of strings] What takes up most of your attention here?

Deborah: Mostly just in my section, including my section, thinking about what is the best way to go, like the best way to play or the best way of bowing ... of course I hear the orchestra's sound, but I would be involved in my own sound, and my desk partner's sound, and all the [front] line's sound here.

In this interview that took place in the seats at the front of the viola section immediately after a rehearsal, Deborah is recalling more than just listening to and evaluating her sound or the sound of the group. Rather, there is an intentionality evident in the way she describes thinking about and being involved in the “best way to play”. Early theorising in music psychology hypothesised just such an effortful extension of the mind into imagining musical sounds as a basis for performance (Seashore, 1938/1967). This theory proposed that musicians can conceive of sounds and musical specifics in great detail and vividness, particularly for performance at a high level. More recently, Trusheim (1991) explored brass musicians’ “concept” of sound, as used in performance. The “concept” he refers to is proposed to be a mental auditory image of an idealised sound that is consciously developed and practised. It includes imagining vivid details of sound quality, musical features (e.g., dynamics or tempo variations), and, in some cases, kinaesthetic information about playing the instrument. This effortfully created “concept” appears similar to what the viola player here is planning for and focusing on, even in the moment of performance. The conscious intentionality described in conversations such as these indicates that the musicians were focused not just on what they could immediately perceive, but also on a mentally created ideal that included the sounds they wanted and the physical techniques of how to achieve them, and this is described here as playing intentions.

Although the mental process of engaging with playing intentions was not directly accessible to observation, their use was inferred from observing physical signals of how

musicians were engaging with their environment. The following vignette relates instances of an orchestral musician focusing on and making use of mental creations of a future performance, that is, playing intentions. For 15 minutes or so before the first rehearsal of the week, the cor anglais player, Fiona, is sitting in her chair getting ready for rehearsal to start. She plays long notes on her instrument whilst listening carefully to her own sound and runs through a number of passages in her part from the piece they are about to play. The conductor enters and begins the rehearsal by giving some directions about how he wants particular articulations to sound and phrases to be played. Fiona listens, looking towards him with a serious expression then looks down at her stand, writes some marks into her part, and studies it with a look of concentration. The orchestra begins its run-through of the piece, and, a little way in, they reach a difficult passage where the rhythm is hard to discern. Fiona continues to play but begins frowning and leaning forward slightly whilst playing. As they arrive at a new passage that has more unison rhythmic patterns within the oboe section, she straightens back to her regular posture. They play a passage that features a celeste (i.e., a keyboard instrument) accompanied by winds and strings, and the conductor stops them to rehearse the celeste player on her own. As the celeste plays alone, Fiona leans in and looks with concentration at her own part, tapping the side of her leg in the rhythm of her part, as if accompanying the celeste, and moving her upper body up and down along with the shape of the phrase. The orchestra continues playing and they reach a long section of rests for the oboes. The second oboe player, sitting next to Fiona, sits back and looks at an upcoming passage in her part and begins miming through it on her instrument as the orchestra continues their rehearsal. A break is eventually called and both Fiona and the second oboe player stay in their seats as most of the musicians leave to go to the greenroom. Independently, they look through their part and play through some of the passages again in their own time, put their reeds away, and leave the rehearsal studio. In these field observations, Fiona engages in several actions, such as miming, practising her part, tapping rhythms, and effortful concentration on her notated part, that strongly suggest she is concentrating on a deliberate mental creation of what her part sounds like.

Putting interview and observational data together, it appears the orchestral musicians in this study were engaging in agentic mental representations of how they intended to perform, and this could occur whilst actually playing as well as before and after. In the vignette relayed above, Fiona was observed looking at her part and miming with her instrument, as well as concentrating on upcoming or recently played passages. As the rehearsal context precluded practising and making sound, these actions are suggestive of

someone concentrating on mental engagement with the notation to rehearse performance details. This silent reading of notation is sometimes described as auditory imagery (Brodsky et al., 2003; Janata & Paroo, 2006; Keller & Appel, 2010; Keller et al., 2010; Reisberg, 2014) or audiation, an aural equivalent to visualisation (Brodsky et al., 2008; Gordon, 2007, 2009). Experiments by Brodsky et al. (2003) on musicians' notation reading were used to argue that auditory imagery is mentally realised in real time with varying levels of detail, and it "possesses a sensory quality that is similar to the experience of perceiving" (p. 602). This appears to corroborate the idea that Fiona was not just looking at her music but was silently paying attention to the formation of auditory images she intended to perform, that is, playing intentions. Thus, it is proposed that the mental process of forming playing intentions was part of how these musicians engaged in the rehearsal processes of developing and refining how the performance would take place.

The term playing intentions is used here in preference to audiation or auditory imagery, as it describes the process of audiation that occurs as part of a purposefully created auditory imagery during the context of performance. In the literature of music psychology, auditory imagery usually refers only to thoughts that mentally organise and represent sound in the absence of stimuli, whether verbal, musical, or otherwise (T. L. Hubbard, 2010; Reisberg, 2014). Audiation is a broader term that describes the imagination of sounds that can occur in the absence of physical sound, not unlike Seashore's description of this theory as "hearing it out" through the "mind's ear" (Seashore, 1938/1967, p. 6), but that can also occur at the same time as performing, composing, or listening to music (Gordon, 2007, 2009). When it comes to describing the observations above, both of the terms appear either too static or lacking in agency. Both are often described as "triggered" by the reading of notation (as in Brodsky et al., 2008; T. L. Hubbard, 2010), although audiation can occur whilst other processes are occurring, such as listening or physically playing an instrument. Auditory imagery is also often isolated from performance by the cognitive-focused research methods involved. In those investigations, physical performance is used only as an indicator of the presence and quality of auditory imagery, rather than examining their coparticipation (as in Keller & Appel, 2010; Keller et al., 2010). The use of the word "image" has also been criticised by Gordon for its reliance on visual metaphors that may not convey the characteristic details that pertain to an aural modality (Gordon, 2007; Trusheim, 1991). Thus, the term playing intentions is employed in these discussions to broadly encompass both auditory imagery and audiation. This account of playing intentions is proposed as an original contribution to the literature, in that it elaborates an alternative description of how this mental

intentionality that is evident in how musicians use this process to imagine ideal performances and to affect change in their practice. In providing an alternative conceptualisation to these two terms, playing intentions are presented here as an original contribution to the literature. Playing intentions make use of awareness, communication, and evaluations of performance, all situated within the context of the negotiated appropriate practices of acting like an orchestral musician, to develop and refine an agreed way of performing, that is, the process of rehearsal. The musicians observed and interviewed here formed playing intentions using personal sources of information, such as their own perception and action, and interpersonal sources, such as communication, and both of these contributions are explored in the next sections.

Perception/action in playing intentions.

From the perspective of personal processes, it is advanced here that playing intentions were present in these musicians' awareness in a similar way to the physical act of playing. Brass players have been known to make use of what they call "sound concept", a kind of deliberate audiation performed before or during playing (Heath, 2016; Trusheim, 1991), a notion that appears more or less analogous to playing intentions. It is a practice that demonstrates the importance of intentions in musicians' formation and enactment of mental representations of performance. The use of "sound concept" is also known by other terms, such as "song" (Frederikson, 1996), and there are equivalent concepts about the use of imagination in other performance traditions (e.g., in singing: Hemsley, 1998). Two aspects of "sound concept" described by Trusheim (1991) are germane to this study. Firstly, effort is put into its development over many years. That is, it is used as a pedagogical and practice tool to help brass players improve sound quality and musical control over the course of a career, particularly through years of schooling and continued practice sessions. Secondly, there is an effortful, everyday application of "sound concept" to orchestral performance, where, having developed a strong ability to audiate the precise sound quality and musical characteristics intended, that audiation becomes a major focus of the musician whilst playing within the orchestra. It is proposed here that playing intentions are similarly present in the awareness of orchestral musicians as they engage in their work and this interacts with their personal experience of perception and action.

Just as brass players' "sound concept" can involve more than just aural information, playing intentions were inferred to include kinaesthetic, spatial, and temporal information also. A field observation made during a ballet rehearsal illustrates this kinaesthetic aspect of

playing intentions: Chris, a rank-and-file double bass player, asked a question of the principal, pointing with his bow at the music with a frowning, quizzical expression. The principal, also frowning, looked at the indicated passage in the music for a few moments and then mimed playing through the passage. He paused for another moment, nodded and made a short reply to Chris, who nodded in acknowledgment. It appears here that the principal player was imagining, considering, and exploring the kinaesthetic aspects of his playing intentions for the purpose of making a conscious interpretation or decision about the performance.

Immediately after this rehearsal, Chris relied on similar kinds of imagination about playing to discuss rhythmic connections in the ensemble:

Chris: Sometimes you can hear where two parts are differing [points to two different seats in the orchestra]. Sometimes you can just go in the middle of the two [points between them with decisive hand gesture], really bring it together, or you can go with one and then [motions grabbing and dragging] bring them along to kind of draw in with what you hear.

The imagery in this quotation is sensorially complex, involving spatial information, (e.g., imagining two different players performing nearby) and temporal difference (e.g., being aware of two competing tempos). Chris was also describing his imagination of bodily sensations and motion (e.g., imagining a movement that in some way connects himself and the two players). This kind of tactile and kinaesthetic information was identified by Trusheim (1991) in his interviews with brass players, in which some mentioned tactile and motion-related imagery as part of their imagination of sound. Examples of this include imagining “stickiness” between notes or imagining that sounds are being thrown or projected (Trusheim, 1991, p. 147). The use of metaphor in this fashion is held to be a widespread practice in the teaching and learning of music performance (Schippers, 2006). Presentations of playing intentions in this study appeared to be able to include bodily sensations of playing, movement through space, and relative experience of musical tempo or time.

Particularly for bodily movement, the anticipation and prediction that accompanies playing intentions are closely tied to the immediate physiological and psychological processes of performance. Elite ensemble performance is argued to be a situation in which “pure reaction cannot be effective” (Badino et al., 2014, p. 102). Rather, prior knowledge in the form of prediction and information-sharing is crucial. Keller et al. (2010) found that anticipation of future aural feedback, that is, what the musicians anticipate they will hear and how it will fit in with what they are doing (i.e., prediction), forms part of the “sensory” input that musicians rely upon to coordinate played sounds with external points of reference. They

further demonstrated that anticipatory auditory imagery can modify motor functions of bodily movements in the prediction of rhythm. The main conclusion put forward by Keller et al. (2010) is that the ideomotor functions (i.e., functions that respond to mental stimuli) used for prediction of sounds are highly associated with sensorimotor functions (i.e., functions that respond to physiological stimuli) for efficiency in physical movement. The majority of the literature on auditory imagery proposes “modelling” as the mental activity occurring to allow for these predictions to be made and acted upon (Badino et al., 2014; Keller & Appel, 2010; Keller et al., 2010; Large, 2000; Wing et al., 2014). However, Wilson and Golonka (2013) have argued that comparing human prediction to modelling is too literal a computational analogy, in that it implies objective measuring faculties to which human minds do not have access. They propose that the sensorimotor functions and prior experience that human minds can access are sufficient for individuals’ direct use in guiding predicted movement or action. They contend that this is a truly embodied cognition, in which individuals’ sensory perceptions are directly connected to intentional motor functions without the intermediary of an “internal” cognitive measuring activity, such as modelling. Whether mental modelling is part of the process of prediction or not, it is advanced here that there is sufficient argument to support the existence of a very close relationship between the cognitive processes of planning ideal sounds (i.e., anticipatory auditory imagery, including details of pitch and rhythm in fine detail) and executing the motor skills in the most efficient way to achieve those sounds.

Long periods of time in practice and experience of playing with others allowed the musicians in this study to develop associations amongst their motor processes, anticipations of the sound they would produce, and their anticipations of what others would play. Janata and Paroo (2006) found that the vividness and accuracy of auditory imagery increased with musicians’ level of training and experience. They also found, in practice, no functional difference between auditory imagery and auditory anticipation, perhaps suggesting that anticipation is a contextual characteristic of how this imagery is enacted.

Bridget: Within our section, the seating rotates a lot, so most weeks you’re sitting next to a different person, and every person has a different sound and a different way of playing ... you’re concerned about really trying to match each person ... some people, I probably sit with them more often than others, and so I find it’s quite easy to get settled sitting next to them. Other people, it might take half an hour or something and then I can start playing with them. But I think I adjust a lot quicker now, and that’s just because I’m familiar with all the people.

In this interview extract, the violinist, Bridget, describes how sitting with each one of her section colleagues presents a different contextual requirement for anticipation of how to perform together. This includes the finer details of playing that are difficult to communicate about verbally. She also suggests that the greater her experience with each colleague, the faster and better that anticipation becomes. There is certainly evidence across the literature that each and every position in an ensemble makes different, situation-dependent requirements for how musicians perform in that position (Keller & Appel, 2010; Knight, 2006; Murnighan & Conlon, 1991; Seltzer, 1975; Wing et al., 2014). It would follow that the development of anticipatory processes in musicians' playing intentions is similarly situation dependent. There is also substantial argument that the development of performance practices occurs in person-dependent ways, influenced by individuals' "biographical" factors, or cultural access and life experiences (Hager & Johnsson, 2009; Krampe, 2006; Manturzewska, 1990; Moore et al., 2003; Sloboda & Howe, 1991) as well as biological factors such as ageing (Brodsky, 2011; Gembris & Heye, 2014). It appears that the experiences of individual musicians, be they biographical, biological, or situational, can make ongoing contributions to the development of anticipatory playing intentions that are flexible in changing circumstances.

This account of the role of perception and action in playing intentions has described how these musicians experienced their own playing intentions in a similar way to how they perceive actual playing. This could include the kinaesthetic, spatial, and temporal information that accompanies playing. The anticipatory aspect of playing intentions suggests that musicians' perceptions are directly linked to the motor processes that are part of their actual performance. Repeated experiences allowed these musicians to develop highly person- and situation-dependent connections between anticipatory playing intentions, motor skills in the execution of their own performance, and perceptions of others' performance.

Playing intentions and intersubjectivity.

The co-occurrence of many musicians making adaptations to their playing intentions and performance is a defining feature of ensemble performance. In communicating about playing and incorporating others' performance, the collective activity of the musicians in this study developed intersubjectively, that is, they negotiated practices, attitudes, and values to come to an agreed way of performing. This section explains how playing intentions entered the social interactions of orchestral performance through communication, individual adaptations, and gradually shared performance ideas.

Principal musicians who were observed and interviewed here described how they created playing intentions that encompassed what others in their section should be playing as well. This process required them to engage with the complex verbal and non-verbal communicative techniques and the hierarchically dependent trust approaches described earlier in this chapter.

Deborah: [I am aware of] mostly just my section, including my section, thinking about what is the best way to go, like the best way to play or the best way of bowing. Because of her role as a principal viola player, Deborah describes here taking on responsibility for imagining not just what she should be playing, but what her section should be playing too. She indicates that she relays this through deliberate body movements, known as leading, explained earlier in the section on communication.

Allan: There's a sense of connection. It's not just visual ... I think the curve [in the arrangement of brass players' chairs] helps. But I don't rely necessarily on having that much contact with, say, the tuba. It's kind of like the flow down effect, really, everyone seems to know what to do and where to play, it's not really directing traffic from my point of view.

In both examples here, these principal players are talking about situations in which they do not, for the most part, have the need to check and ensure that everything they communicate to the section is being followed. Rather, they suggest that they are familiar with and respect their colleagues' abilities, and they communicate playing intentions for the entire section to their colleagues with an attitude of trust that it would be attended to appropriately. In creating playing intentions that involve other people, these principal players bring this process into the social interaction of the orchestra as they perform.

In the negotiation of orchestral performance that occurred amongst the conductor, principals, and rank-and-file musicians, communication about playing intentions and individual adaptations to those discussions contributed to intersubjectivity in performance. The following vignette illustrates how, although individuals' agency was required to enact the mental creation of playing intentions, their communication could bring those differing playing intentions closer together. During a rehearsal of Holst's *The Planets*, the conductor comments to the trumpets that their articulation is not matching the trombones. He tells them that the trombones' notes were more detached while the trumpets' notes were more legato, and he imitates via singing the note length he heard from each of them. He then asks them to "place the notes" and uses a hand motion to convey the rhythm and sound duration of the note length he wants them all to play. In response, Allan, the principal trumpet, leans into his

stand, while the second trumpet nods acknowledgement to the conductor. The principal trombone nods and then looks at his music, concentrating as if singing through it in his head and, with his own hand, imitates the conductor's hand motion on each note of his mental rehearsal. In this vignette, the conductor communicated to the group of brass players an aspect of his playing intention for his ideal performance in this part of the piece. In reply, each of the players mentioned here used their own individual responses for accommodating that ideal into their own individual playing intentions. This could be described as a relational interdependence of social and individual agencies (Billett, 2006), in which individuals' agency was being influenced by the collective agency of the orchestra in how playing intentions were negotiated and agreed upon. The playing intentions here were still individual to the person, but the interaction allowed them to change their collective action. In doing so, they brought their personal playing intentions closer to the shared performance ideal through the personal adaptations they made. In other words, they were developing intersubjective playing intentions as a way of rehearsing.

Musicians also brought previous socially shaped performance ideals into present rehearsal situations. During one ballet rehearsal, Evan, the percussionist, used several occasions during rests or when the orchestra had stopped to turn to the glockenspiel and mime playing through a passage. Sometimes he was lightly tapping the bars with his fingers, sometimes with fingers hovering just above the bars, and sometimes with mallets well above the instrument. He later explained that he was anticipating a challenging passage coming up soon in the rehearsal:

Evan: We haven't played it yet, but it's coming [laughs]. It's a tricky little glockenspiel orchestral excerpt, which requires you to pretty much look down the whole time, so you get the notes correct. But at the same time, you're always looking up [to the conductor] to see if you're correct.

The enactment of the playing intentions observed and described here is carried out by Evan alone. He refers to the passage as an orchestral excerpt, which are difficult passages from the orchestral canon that are commonly used as audition material and form a major part of the curriculum in tertiary performance education. This means he would have experiences with this passage such as performing and working on the excerpt outside of the orchestral context with teachers and peers (Hager & Johnsson, 2009), as well as in previous performances of this ballet in his current role. Being conscious of previous interactions regarding this piece may well be a possibility, as Trusheim (1991) reported orchestral musicians distinctly hearing both instrumental sounds and voices of former teachers and mentors during their practice and

performance. This is relevant to the sociocultural argument that individuals bring their own unique understandings, based on their history of social and personal experiences, into their engagement with present situations (Valsiner & Rosa, 2007a; Wertsch et al., 1995). Evan also mentions the variability of the conductor's input into this passage at the time of performance, another person the performer must accommodate into his intentions for the performance. Illustrated through this instance, interactions with others, both in the present moment and in their past experiences, could simultaneously influence these musicians' playing intentions.

The musicians in this study made use of well-practiced processes of adaptation to quickly find shared ways of playing, and this illuminates the relationship between intersubjectivity and change in orchestral performance.

Allan: Spatially it's a different feel in this smaller Baroque orchestra this week... We are very much partnered with the timpani.... It's just smaller in every way, you know, sound concept, and that kind of thing. Also, we don't do that kind of repertoire very often, so it is so different, and it was really interesting, just the first five or six minutes of the rehearsal, I think everyone was just getting it into their head that, actually, we can really make a much smaller and lighter sound than such a symphonic sound.

Allan describes here how his section arrived together at not just ideas for playing specific passages, but also a general approach that informed their performance of sound quality and dynamics. There are references here to the brass players' practice of "sound concept" discussed earlier, but Allan's description of playing intentions also incorporates awareness and sensations of space, musical motion, and connections with colleagues. This situation is one where the brass section, used to doing things a certain way, had to individually contribute to help change the collective approach by adapting their own playing intentions. It appears that this needed to continue until everyone, or perhaps just the principals and conductor, were happy with the outcome. The individual playing intentions may still have been different according to the person and situation; for example, it seems unlikely that the timpanist would think about sound in the same way as a trumpet player. However, it was still a negotiation of playing intentions that occurred through processes of playing, evaluating, adjusting, and adapting with others in this concrete performance situation. That is, it was an intersubjective process that changed the musicians' playing intentions as well as the eventual performance itself.

This section has elaborated how playing intentions can enter the social interactions of orchestral performance through communication. This happened, for example, when principals created and communicated playing intentions to musicians in their section. In

communicating about ideal expectations for a given performance, all the musicians involved, including the conductor, contributed to intersubjectively developed ideas about how the performance should occur. The musicians also brought their past experiences into those interactions, including prior negotiations of performing in educational and performance situations. Personal adaptation was an important aspect of establishing shared playing intentions, relying on the musicians having well-practiced ways of seeking valid information and incorporating these into their individual playing intentions quickly and with a high degree of accuracy. These continuous adaptations were a characteristic of musicians' ongoing engagement with their performance, underscoring the intersubjective processes of collective action within an orchestra.

The Metaprocess of Rehearsal

The five processes identified and elaborated in this dissertation are proposed here to contribute to a metaprocess of rehearsal, that is, the intersubjective formation and reformation of ensemble performance. As expressed in Figure 5.3, all five processes are ultimately connected to the ways orchestral musicians engage in and change their individual and collective performance. Awareness is fundamental to musicians perceiving and making sense of performance and the interpersonal environment in which it takes place. Through communication, individuals can negotiate the practices, attitudes, and values that form orchestral performance. Musicians' evaluations of their own and others' performance provide their basis for appraising how performance is currently taking place and for making judgements about how it should be different. Enacting these orchestral practices, values, and attitudes in appropriate ways takes place in and is negotiated through the many interactions that occur in and around the orchestral environment. Ultimately, through forming playing intentions and communicating about them, orchestral musicians negotiate their ideal ways of performing, making gradual adaptations to their individual and collective performances. Thus, these processes are the means by which the orchestra's shared practices, values, and attitudes can be intersubjectively negotiated towards a shared way of performing. In other words, they contribute to a collective process of gradually reforming and reconstituting performance that musicians recognise colloquially as rehearsal.

This conceptualisation of the term rehearsal designates a metaprocess of constituting change in performance. While the term can describe a specific musical event or single interaction, it is intended here to refer to a metaprocess that encapsulates how musicians engage in ongoing performance activity together. Outside of a musical context, it has been

used in relation to the cognitive, behavioural, or neuropsychological aspects of development to signify the process of mental or physical repetitions (Bauer, 2013; Logie et al., 2003; Schmidt & Wrisberg, 2004). Beyond this simple meaning and by elevating the musical word to a technical term with the sociocultural context described here, it may be useful in referring to the collection of personal and interpersonal processes that move musical performance towards a changing and sometimes shared goal. For technical description, the processes elaborated in this chapter indicate that rehearsal consists of the personal and interpersonal process of progressively constituting and reconstituting musical performance. However colloquial its current usage, the term rehearsal may be the most precise way of describing the process of how “near-perfect” performances (Seltzer, 1975) are developed amongst musicians in elite musical activities.

By articulating how professional orchestral musicians engage in the process of rehearsal, this chapter responds to aspects of the research question that relate to intersubjectivity and engagement. The five categories elaborated here explain some of the qualitatively different ways in which the musicians in this study engaged in professional orchestral performance alongside physically playing their instruments. The combination of personal and interpersonal processes involved in rehearsal illustrates how musicians constitute their shared understandings of themselves and their activities, that is, how intersubjectivity arises through their coparticipation in orchestral performance.

What Orchestral Musicians Do: Processes of Rehearsal

Chapter 5 presents illustrations and explanations of how a sample of professional orchestral musicians engage in their work and how their performance is intersubjectively negotiated through processes of rehearsal. It was found that playing actions, or physical productions of sound through an instrument, were accompanied by other “non-playing” physical, psychological, and sociocultural processes that continued throughout the musicians’ broad engagement with their environment. Five processes were identified as having an important influence on the musicians’ participation in orchestral performance, comprising (a) awareness, (b) communication, (c) evaluation of performance, (d) acting like a professional orchestral musician, and (e) the formation of playing intentions. There were both personal and interpersonal aspects to these processes and, together, they allowed the individual musicians to gradually form and reform, or rehearse, shared practices of performing together.

The musicians in this study were found to use different forms of awareness that influenced and were influenced by their engagement with the performance or orchestral

environment around them. The coordination of their playing with the rest of the orchestra incorporated a broad array of sensory awareness, and their use of this was highly situation dependent. The musicians also employed a variety of forms of communication, including vocal, non-vocal, and even deliberate withholding of communication, to enable the possibility for immediate interactions when dealing with swiftly passing moments in performance. They frequently engaged in evaluating their own and others' performances, that is, they made appraisals and formed judgements about musical as well as non-musical actions. The opinions of others, whether guessed or confirmed through communication, had a distinct impact on the evaluations that musicians made about themselves, being able to open up new perspectives or criticisms on their own performances.

The issue of trust arises at this point, as the withholding of information or the questionable truthfulness of a communication might seem to be at odds with maintaining trust amongst colleagues. There were occasions when orchestral musicians' interactions caused substantial problems with their trust in their colleagues and their confidence in their own ability to perform. Subsequently, some musicians' willingness to take creative risks suffered along with their ability to perform effectively, and it appears that it negatively impacted their well-being. It is possible that this lack of trust could discourage musicians from seeking timely help or clinical intervention in the case of psychological or physiological problems. These findings about trust are put forward as new evidence and descriptions of how trust is manifested in orchestral workplaces. Perhaps as a way of coping with such serious consequences, humour, joking, playfulness, and laughing were found to have been used by musicians to moderate the difficulties of discussing evaluations. Through maintaining supportive environments and regulating trust relationships, humour could indirectly impact musicians' well-being and ability to perform effectively with their colleagues. This account is put forward as a new contribution to the literature by elaborating the relationship between humour and trust and providing evidence of how musicians negotiate the social or hierarchical conditions for when humour or laughing is appropriate.

The practices, attitudes, and values that musicians consider appropriate to orchestral work and acting like an orchestral musician were shared and contested in a variety of professional and informal ways. In this manner, the musicians in this study could affect the shared understandings about what they should do at work and how they should do it. As they interacted with their colleagues and participated in the social sharing of orchestral ways of acting or regarding their work, they exercised discursive control over the attitudes, values, and practices of orchestral performance. The final process of rehearsal elaborated in this

chapter is the formation of playing intentions, that is, the process of engaging in effortful and detailed mental creations of sound, or audiations, of what is intended to be performed.

Through using this auditory imagery to affect performance, this process is advanced as an expression of the musicians' intentionality in performance. The term playing intentions is used here to encompass the existing concepts of audiation (Gordon, 2007, 2009) and auditory imagery (T. L. Hubbard, 2010; Reisberg, 2014), extending those notions to more directly include the musicians' intentionalities in how they form those mental creations and how they use them to affect immediate and future performances.

The five processes of orchestral performance explored here form a meta-process of rehearsal. They describe sites of intersubjectivity in which musicians can individually and collectively exercise change and improvement in performance. The colloquial term for working together to improve musical performance is rehearsal, and it is proposed here that these five processes constitute a technical description of this term. The intersection of individual musicians' understanding and agency, as well as the interactions necessitated by engaging in their work, are the potential moments in which change in understanding and practice can occur, either with momentary or long-term consequences for performance.

Chapter 5 has focused on setting out and elaborating how a selection of professional orchestral musicians engaged in their work together and the processes by which intersubjectivity, or shared understandings about values, attitudes, and practices, arose from this engagement. Orchestral musicians' well-being and career sustainability were identified in Chapter 2 as important issues in orchestral performance literature. Chapter 5 illustrated and explained how trust relationships, negotiated through how colleagues demonstrated goodwill and support, impacted both positively and negatively on musicians' well-being and ability to perform effectively, which in turn may affect their career sustainability. In the literature, individuals' learning and development through coparticipation were identified as key factors in understanding their well-being and performance (Billett, 2002b), and it was proposed in Chapter 3 that this connection could be better comprehended by investigating what engagement and intersubjectivity looked like in the context of orchestral performance. Chapter 5 primarily addressed this objective, setting out findings that detailed processes of how a selection of orchestral musicians engaged in performance together, how intersubjectivity arose from those processes, and how those processes constitute a meta-process of rehearsal. Chapter 6 describes and explains patterns of change, constituting short-term learning and long-term development, that arise from the processes of engaging in orchestral practice described here.

Chapter 6: Learning and Development in Orchestral Musicians’ Performance Knowledge

To investigate learning in professional orchestras, this study investigated how intersubjectivity arises as musicians engage together in and learn through their work. The previous chapter explained what professional orchestral musicians do as they engage in their work together. It also elaborated how this engagement involves intersubjectivity, or the shared understandings of self and activity that arise from social interaction and coparticipation in performance. Coparticipation refers to the interacting processes of social and physical affordances and individuals electing to engage with those affordances (Billett, 2002a, 2002b). This sixth chapter presents findings about how learning and development arise in musicians’ performance knowledge as they engage in orchestral work together. In Chapters 2 and 3, investigating orchestral musicians’ learning and development in the context of performance activity was identified as an appropriate way of further understanding their well-being and career sustainability, which are two primary concerns within the classical music industry (Ascenso et al., 2017; D. Bennett, 2008; Gaunt & Dobson, 2014; Rink et al., 2017; Smart & Green, 2017). This chapter contributes new evidence for explaining musicians’ complex, multisensory reconstitution of performance knowledge within their learning processes. It also elaborates how musicians’ perceptions of their long-term development may influence their well-being and ongoing ability to participate in orchestral work.

Consistent with sociocultural literature, the distinction is made here between learning and development (Billett, 2015; Rogoff, 2003; Valsiner & Van de Veer, 2000; Wertsch, 1985). Within this perspective learning is conceptualised as microgenesis, or the moment-to-moment processes of change in understanding and practice that arise from individuals’ participation in and meaning-making around an activity. Development is conceptualised as ontogenesis, or lifelong changes in individuals’ knowledge and abilities that guide their interactions with daily life. In the course of undertaking this study, one question was a common reaction when introducing the topic of professional orchestral musicians’ learning - “Do they learn?” In other words, the question was met with scepticism and the notion that learning, as a part of daily activity, is not relevant to musicians who are engaged permanently with a professional orchestra. Sometimes asked mischievously and sometimes seriously, this question could indicate a perspective based on assumptions about the elite level of their

performance. Alternatively, it sometimes suggested a perception of orchestral work as repetitive and “uncreative” compared to other kinds of performance (Cottrell, 2004, 2017). Perhaps, though, the assumption that learning is not occurring comes from much broader cultural understandings of work, in that schooling and study are the designated time and place for “learning” and work activities are the time and place for “doing” (Billett, 2017). This dualism has been critiqued by sociocultural perspectives on the relationship between working lives and learning (Billett et al., 2006; Fenwick, 2001; Lave & Wenger, 1991; Wertsch et al., 1995). From this perspective, learning is viewed not merely as an outcome of educational activities, but as a process that arises from individuals’ ongoing engagement with the world. Learning is considered part of the continuous meaning-making processes of consciousness and is inextricable from the associated processes of thinking and doing. In this sense, individuals’ engagement in daily activities continues to create change in understanding and practice throughout working life, and musicians’ thinking and acting is no exception. To answer the question “Do orchestral musicians learn?”, it is proposed here that their learning and development are constituted within the changes in their knowledge and practice that occur with participation and continued experience in orchestral performance. It is further suggested that a better question to ask is “How does this learning occur?” Through the synthesis of data from observations and interviews, this chapter addresses this question, explaining the participants’ daily interactions in orchestral performance as the sites of microgenetic learning processes. It also presents the musicians’ accounts of how they perceive their personal histories, providing insights into the knowledge, attitudes, and approaches to performance that form part of their ontogenetic development. This chapter commences with an elaboration of musicians’ microgenetic learning as it co-occurs with their performance activity.

Microgenetic Learning: Changes in Performance Knowledge

This section describes how microgenetic learning (Wertsch, 1985), that is, moment-by-moment and often small, incremental changes in performance knowledge, can occur in professional orchestral performance. Performance knowledge is described here as the procedural knowledge (McLaren, 1960; Somerville & Lloyd, 2006; Stuble, 1992) that musicians form and reform through their experiences of perception, action, and interaction with others. Through focusing the research methods and procedures on sensory engagement, it was identified that the ways in which performance occurred over time and how the musicians in this study experienced space and place were important to how their performance

knowledge changed. Firstly, how the musicians experienced performance over time is described and analysed here to elaborate the temporal structure of short-term changes in their performance knowledge. Secondly, the musicians' awareness and use of space is examined to detail the concept of "emplacement" of performance knowledge (Fors et al., 2013; Pink, 2011). Finally, the idea that orchestral musicians co-create a performance environment is elaborated to explain the sociocultural context of these forms of learning.

The term performance knowledge refers here to the kinds of procedural knowledge that musicians engage in whilst performing, shaped by their perception and action and through culturally shared understandings of performance. Procedural knowledge is regarded as a knowledge that exists within acting or being, as distinct from declarative knowledge that uses representations of language (Ryle, 2009; Torff & Sternberg, 1998). This difference has been characterised as a contrast between "knowing how ..." and "knowing that ...", or reflection-in-action and reflection-on-action (Stubley, 1992). The following observational fieldnote provides an example of an orchestral musician engaging with this kind of procedurally focused knowledge. Whilst the conductor is giving feedback to the orchestra during rehearsal, Bridget, a rank-and-file violinist, appears to be paying more attention to her own part on the music stand, moving her head and arms in the rhythm of the piece, as if miming what she is about to play. After the orchestra plays the piece once more, she leans in to look at the part again and sings to herself while rhythmically conducting with her hand at the same time. Through this miming activity, it appears that she is focusing on the sonic or physiological details of her playing intentions. Subsequently, it is imputed that she is engaging with in-the-moment procedural knowledge of performance through focusing on her playing intentions. Taking this epistemological theory and observations of orchestral musicians' activities into account, performance knowledge is conceptualised here as the musicians' constitution of knowledge within and through the act of performing.

Illuminating how musicians' performance knowledge changes is crucial to comprehending how learning can occur in orchestral performance. From a sociocultural perspective, individuals experience moment-to-moment changes in their understanding and practice through participating in and making meaning out of their activity. This is held to constitute microgenetic (i.e., moment-by-moment) learning (Wertsch, 1985). In Chapter 5, five processes were identified and elaborated as ways of engaging in orchestral performance, consisting of (a) awareness, (b) communication, (c) evaluation of performance, (d) acting like a professional orchestral musician, and (e) the formation of playing intentions. These processes were advanced as contributing to a metaprocess of rehearsal. That is, they were

found to be the personal and interpersonal means by which the musicians gradually shaped and reconstituted their practices towards a shared ideal performance. As musicians engage in those processes to make changes in current and future performances, the changes in their performance knowledge and practice constitute microgenetic learning processes.

This section discusses in detail the temporal and spatial conditions that affect microgenetic learning in performance knowledge and how this contributes to the co-creation of a performance environment.

Temporal dimensions of learning.

The temporal arrangements of orchestral activities and how the musicians in this study engaged with their work over a particular period of time were found to be contributing factors to microgenetic learning in their performance intentionalities and practices. Within the time immediately surrounding a single occasion of performance, musicians' processes of engagement (i.e., the processes discussed in Chapter 5) were found to be enacted differently in the moments before, during, and after playing. How the musicians engaged with those performances had implications for how they made changes to their immediate and future performances. Musicians' anticipatory auditory imagery is held to be accessible to their sensory awareness (Keller et al., 2010); that is, what they are about to play can be perceived by musicians in a similar way to actual sounds. Thus, their changes to performance were found to be informed by "listening forwards" to their anticipations and playing intentions, aware of their immediate present environment, as well as remembering "back" to the most recent performances. Over the timeframe of a week, the orchestra's rehearsal and performance schedules created particular timelines for musicians' engagement. Within these temporal dimensions, their use of memory and changes to playing intentions could be described as nonlinear, or fragmented. Those changes also maintained a directionality throughout the week that reflected the collective adaptation and changes to performance negotiated by the whole orchestra as they worked towards a shared performance ideal. Both the changes to performance knowledge around particular moments of rehearsal and the arrangement of multiple moments throughout a weekly program form the temporal dimensions to how orchestral musicians co-constitute their performance environment.

Changes in performance knowledge immediately before, during, and after playing.

Examining what occurs in the moments immediately before, during, and after playing a single passage of music reveals some of the microgenetic processes of change enacted by the orchestral musicians in this study as they engaged in their work. The following vignette

illustrates how the musicians' performance knowledge was changed through their engagement immediately around discrete moments of activity. Whilst the conductor is giving feedback to the orchestra during a rehearsal of Bernstein's *Mambo*, Bridget appears to be paying more attention to her own part on the music stand, as noted above, reading and moving her head and arms rhythmically, as if miming what she is about to play. After the orchestra plays the short piece, she leans in to look at the part again and sings to herself while rhythmically conducting with her hand at the same time. When the conductor makes a comment to the violins, Bridget stands up and looks over at the principal's music stand. After studying the principal's part, she looks down and marks her own part. She asks a question of the principal, who laughs and nods. Before sitting down, Bridget continues to watch as the principal makes further markings in her part. It is a short piece, and the orchestra plays through it again quickly. As described earlier, Bridget then looks at her part, sings, and mimes playing the rhythm of her part while the conductor talks. The orchestra plays the piece once more. Afterward, Bridget makes a comment to her desk partner as they put that piece aside and find the next one in their folder.

From these observations, Bridget appears to be focusing her awareness on her playing intentions for performance in the immediate future, selectively attending to particular kinds of information during performance and recalling the details of her performance immediately afterward. In an interview immediately after this rehearsal, she made the following remarks about this part of the rehearsal:

Bridget: I think there was an ending to *Mambo*, and we changed that, and then there was a bit of a discussion because I think someone missed a beat. I think the only real discussion that [my desk partner and I] had was that there was one bowing where it wasn't working with the section, and I was looking at it and she was like "yeah that doesn't work out", so we changed some things.

This comment refers directly to her verbal communication with her desk partner, observed during rehearsal, but it is possible to connect it also with her miming actions, during which she may have been focusing on a possible problem with the bowing indications. From her interactions with her partner and the principal, both before and after the moment of performance, she appears to gather information about how the section intends to play the piece. She also selectively manages her awareness to focus on a limited number of objects in a short space of time. On both occasions when the conductor was speaking, Bridget chose to focus on her part, singing through passages internally and considering what it would sound like. In deciding to do this, it is possible that she needed to evaluate both the information

being provided by the conductor and the value of her own internal rehearsal and had decided that the latter was more important to her immediate performance of the piece. Throughout this short segment of rehearsal, Bridget can be understood to have been focusing “forwards” in anticipation of performance (Badino et al., 2014; Keller et al., 2010), selectively aware through her immediate perception and action during performance. It appears she was also listening “backwards” or paying attention to her recall of the details of her performance immediately afterward.

Her communication, awareness of her colleagues, and decisions about where to focus her attention all appear to change how Bridget understands her performance knowledge of this piece. Table 6.1 presents a timeline of how her awareness changed over the course of this example and how this appeared to change her performance knowledge. She appeared to be making predictions about the details of how she and the rest of the orchestra would perform the piece. She did this both through communicating with her section and through her own mental rehearsal of playing intentions, the external signs of which included miming and singing. It is possible that, in this activity, she may just have been recalling a prior occasion of practice or rehearsal. However, her comment that a particular bowing was not “working” correctly indicates both recall of a recent performance as well as anticipation of how the section will play in the future. This is largely for the purpose of checking and adapting her playing intentions. In this instance, it is likely that she was making changes to her playing intentions as she “thought” through the piece and compared it with her memory of what the orchestra had just played, as suggested in accounts of audiation, akin to the visualisation of sounds (Brodsky et al., 2008; Gordon, 2009; Trusheim, 1991). These different uses of her awareness allowed her to change her immediate practices to match her anticipation of what the violin section would play in the future. This analysis of Bridget’s performance in this example indicates how changes occurred within her performance and how they are related to one aspect of her engagement in work, namely, awareness.

Table 6.1. *Violinist's Use of Awareness Immediately Before, During, and After Playing*

	Before playing	During playing	After playing
Observed indications of awareness	Focusing on playing intentions; Looking/listening to principals for information	Focusing on own playing; Focusing on others' playing and actions	Focusing on memory of what was just played; Looking for feedback from others; Focusing on playing intentions for next time
Changes in performance	Marking part to follow instructions; Mentally rehearsing/reconstituting future performance through miming	Matching rhythmic, tonal, or musical aspects of violin section; Evaluating bowing pattern	Searching for details of rhythmic placement; Mentally rehearsing/reconstituting future performance through miming

Change arising from processes of rehearsal.

Similarly, other processes of rehearsal (i.e., the processes identified in Chapter 5) were found to affect performance in different ways in the moments immediately before playing a passage, whilst playing, and immediately after playing. The changes in the musicians' understanding and practice of their performance that arise from these processes are considered here to constitute instances of microgenetic learning, or learning that arises out of moment-to-moment experiences (Billett, 2015; Wertsch, 1985). Table 6.2 presents examples of how the processes of rehearsal were used surrounding the performance of a single passage. The examples are drawn from thematic analyses of the processes of awareness, communication, evaluation, and formation of playing intentions, as advanced in Chapter 5. Similarly to the analysis of Bridget's use of awareness, the musicians in this study were frequently observed to focus on their own playing intentions and the prevailing conditions of tempo prior to playing. Whilst playing, this changed to assessing their own playing and matching it with others', followed by thinking back to what was just played or looking for feedback immediately afterward. Examples of these uses of awareness include Bridget miming through her part before playing, talking about matching her bow movement with her colleagues whilst playing, and studying her part after the orchestra had stopped. These different uses of awareness, that is, the different ways in which the musicians in this study were conscious of events and objects in the orchestral environment, were a crucial part of how they made ongoing changes to their performance.

Table 6.2. *Use of Rehearsal Processes Immediately Before, During, and After Playing*

Performance processes	Before playing	During playing	After playing
Awareness	Focusing on playing intentions; Searching for rhythmic placement	Own playing; Others' playing and actions for matching rhythmic, sonic or musical aspects	Focusing on memory of what was just played; Looking for feedback from others
Communication	Discussing what will occur	Leading movements	Receiving/giving feedback or evaluations of group with colleagues
Evaluation	Deciding who is important, correct, or helpful	Evaluating others for usefulness; Evaluating own playing for accuracy	Evaluating memory of recent performance; Evaluating feedback from colleagues
Playing intentions	Creating future performance, helping make judgements about musical and physical playing requirements	Comparing to awareness of own playing; Adjusting to match others' playing	Planning changes for next performance

Communication amongst the musicians was another vital means of affecting change in their shared performance. Prior to playing, this could occasionally occur through verbal exchanges, but was restricted to non-verbal communication during playing, such as leading movements. After playing, receiving or giving feedback or sharing evaluations of the group with colleagues often facilitated the musicians making changes to their own playing intentions. Examples of these kinds of communication, described in the earlier vignette, include Bridget's interactions with her desk partner as well as the extended discussions amongst the conductor and violin sections. Communication was being manifested in different ways surrounding a single performance of a passage according to the requirements of the ensemble to establish shared ideas for performance. Often, this was a way of providing feedback for the musicians to help bring their playing intentions closer to those shared ideas.

Evaluation of performance was also part of how musicians made changes to their playing across the short time span of playing a single passage. As presented in Table 6.2, the musicians in the study were found to use evaluative processes before playing to decide who was more important or useful to follow. These were also used during playing to appraise their own and others' playing for matching and accuracy, and after playing for appraising the memory of the recent performance or considering feedback from others. For example, Bridget's evaluations of people and objects around her during a moment in the rehearsal were crucial to how she made changes to her understanding of the performance, as described in the following interview extract:

Bridget: Especially in this rehearsal room ... if you're playing something, seeing something, and hearing something, and hearing something over there, and when they're not lining up beautifully with what you're doing, you start thinking "oh shit".

It appears here that her perception that something was wrong provided a motivation for her to change how she was playing. Part of deciding how to make changes to her practice involved evaluating points of reference around her, including principals, other section members, her music, and her physical playing movements, as expressed in this extract:

Bridget: I couldn't really follow what the conductor was doing, and so when in doubt, I thought "ok, I'm just going to go with the concertmaster," and if he's wrong, then oh well ... I've got to focus on playing with my desk partner, who's very reliable, and watching the principals.

To arrive at an altered performance knowledge whilst playing, it appears that Bridget first had to engage in a process of evaluating the people and objects around her and focusing on those that would be most helpful in achieving the desired performance outcome. This example provides an illustration of how the musicians were observed to create momentary changes to performance based on their evaluations of what was going on around them.

Finally, the musicians' formation and reformation of playing intentions was a primary process for making changes to their performance knowledge. Prior to playing, this involved mentally creating the future performance to make judgements about what musical characteristics or physical efforts would be required, as presented in Table 6.2. Playing intentions were also used during playing to assess current performance and to make adjustments to others and, after playing, were used for the planning of future performances. For example, Bridget mimed playing and made written notes on the part immediately before and after playing, indicating that she was making changes to her playing intentions for the next performance. In the following interview extract, Evan, a percussionist, describes how he refines his playing intentions in a particular situation:

Evan: In this [playing entry] I'm focusing on the winds, but also taking into account that I'm very far away. The first one was probably pre-empted a little bit too much, and then I adjusted it ... I am pretty much listening to where they are placing their notes, and I'm slightly ahead.

This comment refers to the performance of a particular passage on crash cymbal during a ballet rehearsal. From an informed observer's perspective, it appeared that Evan continued to adjust his rhythmic anticipation and playing intentions throughout the following rehearsals as well. Through examining the musicians' evaluations and playing intentions, it was apparent

that they made changes to their playing and their understanding of what was occurring in the moments of performance throughout single instances of playing a particular passage. These changes were also supported by the interrelated processes of awareness and communication. In the workplace learning literature, the dynamic aspects of engagement are proposed as being crucial to organising knowledge and understanding practice (Scribner, 1985). The processes described here appear to be those important dynamic aspects of how musicians' engagement in moments of performance affect change in their performance practice.

Intentionalities and change in performance knowledge.

The different intentionalities evident before, during, and after playing may be an important influence on the musicians' microgenetic learning processes (Wertsch, 1985), that is, on how they made changes in their current and future performances. Definitions of intentionality are contested (Emirbayer & Mische, 1998; Eteläpelto et al., 2013; Evans, 2007; Malle et al., 2001; Siewert, 2017), but the concept is often used to indicate purpose in the agentic employment of consciousness and activity. As learning is shaped by individuals' engagement in activity, their intentionalities connected to that activity are also held to affect their learning (Billett, 2017; Giddens, 1984). Immediately prior to playing, the musicians' intentionalities appeared to be directed to their anticipation for the sounds they are about to create and control. This occurred through carefully assessing what was happening around them and making judgements about how to enact their performance. During playing, their intentionalities were imputed as being focused on awareness of in-the-moment activity, guiding changes in their performative knowledge-in-action (Stubley, 1992). Immediately after playing, their intentionalities appear directed towards memory by evaluating the performance just gone and planning changes for the next performance, which may be some time distant in the future. Musicians' understandings of performance and enacted practice are directly changed by all of these processes, but the changes are made differently according to the intentionalities involved before, during, and after playing. It may be that the processes examined here exhibited microgenetic changes in the musicians' performance in ways related to their different intentionalities.

To summarise this section, processes of rehearsal (i.e., awareness, communication, evaluation, and the formation of playing intentions) were enacted by the musicians to make momentary changes in their performance knowledge. These momentary changes (i.e., refinements) were observed to occur in the moments immediately before, during, and after single instances of performance, such as playing a particular passage of music. The musicians

made use of awareness around these instances of performance to form and reform their understanding of what was going on around them. They could communicate with each other throughout an instance of performance to establish shared ideas of what to perform as an orchestra and provide feedback on their collective participation in that performance. The musicians made evaluations to appraise the reliability of others' playing and assess their own contributions to the collective performance. By engaging in the formation and reformation of playing intentions around single instances of performance, they affected changes in how they planned to play in the next occurrence of a particular passage. The different ways in which musicians used these processes to affect changes may reflect the slightly different intentionalities before, during, and after playing. The subsequent changes in their performance knowledge constitute microgenetic learning processes, or moment-to-moment changes in their understanding and practice as they engage in orchestral performance.

The following section discusses the musicians' use of memory and playing intentions to connect the changes that occur in these single instances of performance over a week's rehearsal and performance schedule.

Changes in performance over one week.

The orchestral musicians observed in this study appeared to connect discrete moments of performance throughout a single performance program, typically lasting one week. This indicated a pattern to their microgenetic learning that is nonlinear but nevertheless retains directionality. The way in which rehearsals and concerts unfolded influenced the changes in their performance knowledge from one moment to the next, and memory appeared to be a key component in how those changes in practice were enacted. Those connected moments of performing particular passages of music occurred in a fragmented and, hence, nonlinear way throughout the week. In spite of this temporally fragmented experience, the musicians participated together to effect changes that maintained a consistent direction in their shared performance. That is, there was a directionality in the musicians' understanding that was guided by negotiated and shared performance goals. This temporal structure of the musicians' learning processes shapes the performance that they co-create as they engage in performance together.

The following vignette illustrates how, during the repeated rehearsal of a particular passage of music, the musicians facilitated and sustained changes in performance throughout a week's performance schedule. In the first rehearsal of the week, the orchestra plays a complete run-through of Tchaikovsky's *1812 Overture*, one of the pieces in the week's

program, without returning to rehearse any sections. At the start of the following day's rehearsal, the conductor asks the woodwind section to rehearse alone a particular passage from the piece. The passage is in the style of a carillon, or a mimicking of bell tones, in which each individual instrument takes turns to play successively one note each in a melody. A common challenge for individual musicians in this style of orchestration is to successfully match the volume, shape, and intensity of the notes played immediately beforehand. After they play through the passage, the conductor asks them for a specific "bell-tone" like articulation for each note, singing how he wants it to sound. They play through the passage, but their individual articulations do not quite match each other. The conductor sings to them again the articulation he would like, and they play the passage once more. This time, the matching of articulations across the different woodwind instruments improves. The conductor moves on to rehearsing the rest of the piece for a while, and then has the orchestra perform a run-through of the entire work. When they reach the bell-tone passage, not all of the woodwinds' articulations match. During the short rest immediately after this passage, some woodwind players look across at each other, while some make no visible change in expression or posture. At the end of the run-through, they move on to the next piece without rehearsing further. The following day, they do not play the overture until near the very end of the afternoon rehearsal, and then it is only another run-through. When they reach the bell-tone passage, the woodwind section is more uniform in matching articulations. The conductor makes a comment while the orchestra continues playing. Fiona, the cor anglais player, looks up at him and then back down at her part. The next morning, the orchestra has their general rehearsal in preparation for the concert that evening, and they begin by playing all the way through the overture. When they reach the bell-tone passage, several notes from the woodwind section don't quite match in the volume or intensity of their articulation. The conductor makes another comment as the orchestra continues playing. When they finish playing, they move on to the next piece without going back over any passages from the overture.

These observations describe an example of how a single passage of music was encountered by a section of the orchestra throughout the weekly rehearsal cycle of a "major works" concert program. The way that this passage was rehearsed and spread out across the week appears to have required the individual musicians to use processes of memory and playing intentions in a way that allowed them to bring their collective performance closer to an agreed way of playing. This might be characterised as a combination of intra-psychological and inter-psychological processes, that is, explained through the sociocultural

account of both individual and social contributions towards collective performance (Valsiner, 2000; Valsiner & Rosa, 2007b; Wertsch & Tulviste, 1992). The microgenetic learning processes (Wertsch, 1985) that allowed them to construct and sustain a particular way of playing the passage for successive performances occurred only during these isolated instances during the week. Thus, there was a collaborative requirement for the performance of this passage that made it difficult to rehearse or practise outside of these isolated occasions. Given the interrupted nature of how the passage occurred through the rehearsal schedule, it appeared necessary for the musicians to adopt approaches to rehearsal and performance that allowed for changes in their performance across these isolated moments.

Nonlinearity.

Both the rehearsal of the passage of music and the learning processes that facilitated the musicians' changes to its performance occurred in a fragmented, or nonlinear, way over the course of the rehearsal cycle. Table 6.3 presents the timeline of rehearsal for the passage described in the observations, illustrating the seven occurrences of the passage during the week in which the musicians were able to work on it together. As can be ascertained from the description of the carillon-style passage, the main challenge lay in matching the articulation of the other musicians one after the other. This makes the performance outcome reliant on the interdependence of many people making individual contributions to a collective set of practices. This kind of ensemble performance depends upon interdependence, meaning that individual practice undertaken away from the rehearsal may have only limited importance for how the passage was performed with others (Murnighan & Conlon, 1991). Thus, the changes and refinements the musicians made during each of these rehearsal moments, whenever they occurred, were likely to be the only instances in which the learning processes around the passage could occur. This is because their experience was fragmented or interrupted by large periods of time rehearsing the rest of the program. Changes in performance, such as gradually matching the execution of the fortepiano, or bell-tone, notes, were clearly exhibited over those temporally distant occasions. However, the continuous need for the members of the orchestra to make adjustments to group performance together meant that the changes were not always linear. This is demonstrated by the changeable outcomes of the fortepiano passage performance described in the vignette. Thus, their collective engagement in those isolated rehearsal moments created a nonlinear pattern in the successive learning processes that facilitated their changes in performance.

Table 6.3. *Occurrence of a Passage of Music Throughout a Week's Rehearsal Cycle*

Period of day	Wednesday	Thursday	Friday	Saturday
Morning	-	-	-	11:15am
Afternoon	2:20pm	1:40pm, 1:42pm, 2:05pm	2:35pm	-
Evening	-	-	-	9:40pm (i.e., performance)

The continual refinements the musicians made to adjust to each other created a continual demand for making use of memory, evaluation, and playing intentions.

Fiona: [I was trying to] pick up cues of where it was, because it was where the conductor yelled before that it needed more *fortepiano*, and I was really going to give them a smack of a *fortepiano*, but then I suddenly went “Oh, I don’t know if it’s the next bar or the bar after” ... in the end I just did a really wussy note. It was in the right place, but it wasn’t a *fortepiano*.

This statement, made after the rehearsal by Fiona, illustrates the attention she was paying to listening “backward” (i.e., using her memory) to what she remembered of how the passage was played previously so that she could make judgements about the placement and volume of her own note yet to come. She was also listening “forward” (i.e., planning her playing intentions) to make predictions actively about when and how loudly she would play her note. In the observations, the conductor isolated this passage specifically to direct the musicians’ attention to matching each other’s note shape and volume. It is very likely that, on each occasion they played, it presented an opportunity for them to make changes to their performance. This was achieved through the processes of rehearsal, such as evaluating their prior performances, making predictions about what they might have to respond to, and then planning their appropriate playing intentions. The varying success of each run-through demonstrates that these processes were ongoing throughout the week. Each new adjustment by the individual musicians created a new set of musical parameters to which the other section members had to respond. The remembering back to past performances and the adjustment and planning of future performances are part of how those musicians appeared to arrive at an increasingly mature approximation of their desired performance.

Through this use of memory, evaluation, and playing intentions, directionality of those changes to performance was achieved through individual and social rehearsal processes to overcome the temporal conditions that separated different performances of the passage of music. Individually, it is imputed that the musicians anticipated that they would have only a small number of occasions to improve a particular passage during the week. It appears that

the musicians evaluated their surrounding environment for information that would be most important or helpful for developing the performance in a limited space of time. They then attempted to use and make changes to their playing intentions as efficiently as possible. However, it is not just the individuals' sensory immersion in activity that initiates those kinds of changes: Socially shared activity also contributes to the enactment of practices and their subsequent negotiations and changes (Ingold, 2011). In this occasion, the musicians built on others' successive performances as well as their own, performing together and "remembering together" the changes they planned on the last performance. The combination of individual and collective use of evaluation and playing intentions in this example gave rise to directionality in the microgenetic learning processes that sustained changes in the musicians' performance over time.

To summarise this section so far, the musicians experienced these performance events and the accompanying learning processes in a nonlinear way. Individuals' experience of their working activity is held to shape the learning that occurs through its enactment (Scribner & Sachs, 1991). In other words, learning, or changing knowledge about a performance, is a product of engaging in the activities surrounding that performance, and the knowledge and understanding developed is bound to the particular experience of that activity. In the case of orchestral performance, that activity occurs in similar fragmented patterns over the course of week-long rehearsal cycles. The microgenetic learning processes in the musicians' performance knowledge were bound to the intentionalities and activities they engaged with in this kind of nonlinear but directional manner.

Directionality.

The directional changes in the group's performance that occurred whilst rehearsing the passage several times indicate that there was a relationship between the individuals' adjustments to their playing and their repeated coparticipation in the performance (Billett, 2002b; Rogoff, 1990). Another example of this relationship can be found in the following vignette describing the violin section playing off-beats in Khachaturian's *Sabre Dance*. After starting the piece and immediately stopping, the conductor taps his baton on the stand to indicate the tempo and sings the continuous off-beat rhythm to the string section. The orchestra begins again and Bridget, who is sitting on third desk, appears, whilst playing, to be evenly dividing her time between looking at her music stand and looking up at the conductor and group of principals in front of her. The orchestra struggles to find a consistent "groove" between the on-beats and off-beats. The conductor stops the orchestra part way through the

piece and addresses the timpanist, saying that his on-beat crotchets need to be “dry and long”, and Bridget looks over to her left towards him. They play the entire piece all the way to the end, the off-beat rhythm only occasionally sounding unsteady. On this run-through, Bridget still divides her gaze in regular intervals between her part and the group of principals at the front, but she spends slightly more time looking at her part. The conductor runs the entire piece a final time, and the violins’ rhythm appears steady all the way through. Bridget looks to the front only occasionally during this run, spending the majority of the time looking at her music stand.

For the violin section in this vignette, it appeared that several performances were necessary to achieve a more uniform way of playing the piece, as described by Bridget in the following interview extract:

Bridget: In these programs, there’s always something fast or loud or famous. We’re just trying to get our hands around everything.... The first run-through is just scary, and the second time through is better.... We just needed to play [Sabre Dance] heaps of times through.

From an informed observer’s perspective, it appeared that the rhythmic unity of the ensemble improved with each repeat of the piece, and this appears to be confirmed by Bridget’s appraisal as well as by the eventual willingness of the conductor to continue to the end of the piece.

Bridget: My desk partner was just telling me a story about when she played it once before with an orchestra. The violins play off the beat, and she sat next to someone and the whole time they ended up playing on the beat. And we started it, and sure enough, we ended up on the beat.

From its reference to Bridget’s own performance, her desk partner’s, and the former colleague’s, this interview extract appears to convey an understanding that the contributions of the individual musicians are fundamental to the collective improvement of the section. Within this understanding, as each musician adjusts and changes their own playing, the collective action is also assumed to change. In this section of 12 second violinists, it is likely that some may have altered their playing using the same processes. The principal violinists, though, performing a leading role and sitting closer to the front of the section, may have contributed to this change in a different way from those at the back. This appears to indicate a relational interdependence between the musicians’ individual and social agencies (Billett, 2006). That is, each musician’s actions and intentionalities enacted from their unique positions in the section influenced the changes made by the other members of the section,

mutually constituting the group's collective actions. In other words, through repeated collective action, the different contributions and changes made by each of these musicians intersubjectively influenced the change in others' performances, allowing a gradual sharing of and arrival at a common way of playing.

The microgenetic learning processes captured here occurred through a combination of individual and collectively shared efforts across each occurrence of the passage, in which the musicians, in a sense, are co-creating the temporal aspect of their performance. Bridget's personal evaluations of others' performances, judgements about whom to follow, and eventual choices about how to join in all contributed to changes in her playing. However, it is through other section members also changing their playing to accommodate each other that the collective performance was able to improve. Thus, the interdependent performances of the individuals and the performances of the group influenced each other in making changes toward an agreed outcome as they played the piece several times together. These negotiations of how orchestral practices are enacted and what those practices should be are understood to be a constant part of shared musical performance (Brinner, 1995; Murnighan & Conlon, 1991). Subsequently, intentionality appears to be a crucial element here, as individuals' purposeful engagement in the collective activity appears to be how the directionality is sustained (Eteläpelto et al., 2013; Malle et al., 2001). This is advanced as a process in which the musicians were progressively co-creating how their performance occurred throughout the week. In this sense, co-creation is a process relying on the microgenetic learning processes of all the musicians involved in negotiating these changes in performance.

In summary, as the musicians engage in their weekly schedules of work, the professional orchestral musicians in this study encountered discrete passages of music in an interrupted and fragmented fashion throughout the rehearsals and performances of a given program. The microgenetic learning processes through which they make continued changes to their performance knowledge also occurred in a nonlinear pattern over these isolated encounters. The intentional use of memory, evaluation of performance, and formation of playing intentions for future performances appear to have been necessary to enact these changes (Malle et al., 2001). As the musicians enacted these processes interdependently, both their individual and collective efforts gave rise to a directionality in how the group performed together on each occasion, sustained through this intentionality. Through repetitive collective action, the individual musicians' microgenetic changes intersubjectively shaped how the orchestra continued to develop an agreed way of playing. Through these individual microgenetic changes in performance knowledge and coparticipation of the performance, the

musicians co-created how the performance occurred over time. Further to these temporal aspects, the spatial aspect of musicians' performance knowledge indicates how their spatial environment is also co-created through their collective efforts.

Spatial dimensions of learning.

This section elaborates how, through thematic analyses of interview and observational data, spatial awareness was found to be distinctly important to the performance knowledge of the professional orchestral musicians in this study. These findings indicated that awareness of both the relative spatial arrangements of the musicians in the orchestra and the spatial characteristics of the sounds they produced were important influences on how the musicians engaged in performance. A spatial component to the musicians' evaluations was also evident, as changing priorities throughout performance created a requirement for a changing spatial knowledge of the orchestral environment. Through the musicians' multisensory awareness and experience, their spatial constitution of their environment and activity was important to how entrainment occurred, that is, the coordination of movements within shared action (Knoblich & Sebanz, 2008; Phillips-Silver et al., 2010). Microgenetic changes in performance knowledge of this kind are advanced here as being shaped by these spatial aspects of the musicians' engagement in their activities. They are also socially reconstituted as cultural knowledges and practices through coparticipation (Billett, 2002b).

Spatial awareness.

Initial thematic analyses of the interview and observational data found that spatial understanding was crucial to how the musicians in the study engaged with orchestral performance. That is, in addition to the "purely" musical characteristics of the quality, pitch, and duration of sound, it appears that they also constituted this performance knowledge among details of where sounds were located and who was playing them. In discussion with the musicians, the sonic qualities of music performance were initially expected to dominate interviews with participants. This assumption was based on a reading of orchestral cultural practices that consistently values aural components of performance over other aspects (as in McGill, 2007). However, whether talking about their own performance or that of others, almost all discussion included details of spatial position, as in the following extract from an interview with the cor anglais player, Fiona:

Fiona: I was just really focused on what I was playing, and I could hear that it was actually with everybody, but I was particularly zoomed in on my part ... it was this

section here ... I was with the strings, and then the conductor's in this picture too, and I wasn't looking at him.... That's the corridor of violins that I was aware of.

Fiona makes reference here to the centrality of her own performance (e.g., “zoomed in”), as well as the shape of the space occupied by the violins’ sound and their direction relative to her position. This extract is representative of many descriptions of playing articulated by the participants, in which spatial qualities of size, shape, distance, or direction were attributed to particular moments of performance. During analysis of these data, attempts to organise performance themes from all of the interview and observation data around characteristics of sound were found inadequate to account for these references to spatial position. Instead, using spatial awareness as an organising factor allowed a better understanding of the relationships amongst the musicians’ sensory experience, performance, and interactions with the orchestra. Thus, it is advanced here that the musicians created a spatially structured field of information about what was occurring in the complex context of orchestral performance, continually reconstituted with each performance.

Awareness, described here as the consciousness of events or objects in the musicians’ orchestral environment and physical, social, or psychological activity (elaborated in Chapter 5), was a crucial aspect of their experience of space and how their own performance interacted with it. During the situated immediate recall interviews, conducted in their chair within the orchestra immediately following the rehearsal, the participants frequently directed their gaze and positioned their bodies towards objects of discussion. This occurred, for example, when describing their interactions with musicians who sit near to them. During one rehearsal, Bridget, a rank-and-file second violinist, was sitting in the third row, and appeared to be paying attention, almost exclusively, to her desk partner as well as the principals in the first row and the concertmaster, whose positions are depicted in Figure 6.1. She appeared to be paying little or no attention to the other rank-and-file violinists on either side of her, aside from her desk partner. She made reference to this arrangement of her attention in a video-recorded interview conducted immediately after this rehearsal whilst sitting in her chair:

Bridget: I've got a good view of both the concertmaster and my section principal. I don't really have anyone right in front of me ... I've got to focus on playing with my desk partner and watching the principals.

As Bridget made this statement during the interview, she sat up straight, as if assuming a playing posture, kept her eyes focused on the music stand in front of her, and motioned with straightened arms in the direction of the principals’ and concertmaster’s chairs. The principals and her desk partner, as she alluded to, were her primary points of reference about

how her section and the rest of the orchestra were playing the piece. Through her gestures, she acknowledged that each of them occupied a certain position and distance from her. From her physical demonstration of how she was paying attention to them, it appeared that those spatial details were incorporated into her embodied knowledge of how she intended to perform the piece (Somerville, 2006). A further example of incorporating spatial awareness into playing intentions can be seen in the following interview extract:

Chris: Sometimes you can hear where two parts are differing [points to two different seats in the orchestra]. Sometimes you can just go in the middle of the two [points between them with decisive hand gesture], really bring it together, or you can go with one and then [motions grabbing and dragging] bring them along to kind of draw in with what you hear.

In this extract, Chris, a double bass player, describes interpreting rhythmic disagreements amongst different parts of the orchestra and presents possible ways of accommodating them with his own contribution to the performance. Here he makes reference to spatial position, but motion and kinetic affordance, or the possibilities of movement and interaction with the environment (Gibson, 1986; Schmidt & Wrisberg, 2004), are evident in this statement about how he might engage in the performance. From statements and demonstrations such as these, it is inferred that spatial awareness can be as important as sonic aspects to these musicians' knowledge of how to play with their colleagues in the orchestra.

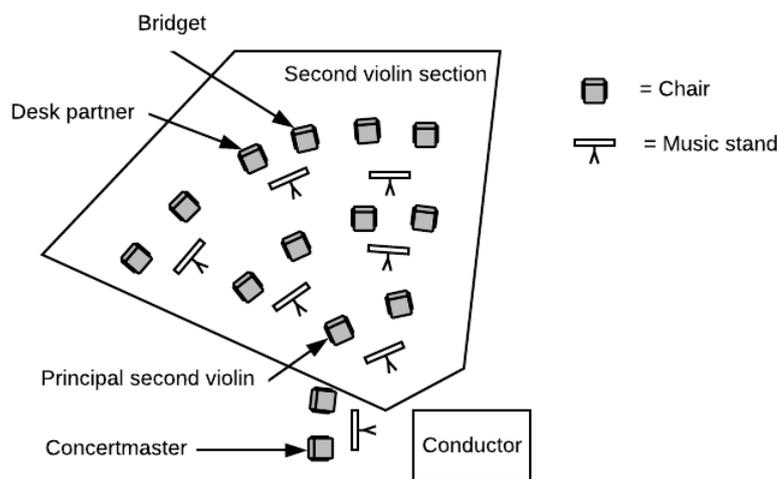


Figure 6.1. Second violin section seating plan.

Spatial awareness and evaluation of performance.

Evaluation of performance, or the musicians' appraisal and judgment of their own and others' performance (elaborated in Chapter 5), played an important role in the continual

change of spatial knowledge during the rehearsals described in these observations. As the musical performance progressed and musical requirements changed, what was important to listen to at one time, such as a violin or brass part, needed to be continually re-evaluated for its relevance to the current situation.

Fiona: In that section I was actually paying attention to the brass, because I seem to be with them and not with the oboes ... this whole page, I was basically with people up the back, so I was just trying to sort of listen and hook in with them [the brass], and ignoring them [the oboes].

This interview extract describes a situation in which Fiona is playing with the brass rather than the oboes and has decided that she needs to disregard what the oboes are playing. Her “map” of the orchestra in this moment of the performance includes the row of brass behind her, as opposed to the row of violins in front of her, described in the previous extract. Her evaluations of what is relevant to the execution of her own part appear crucial in how her spatial awareness of performance is constituted. In doing this, she is enlarging the more important people or sounds and minimising the less relevant. In these cases, the musicians’ spatial knowledge of what was occurring during a performance did not take account of everything occurring in the orchestra. Rather, it was selectively shaped by their evaluations of what was relevant or helpful to their performance through their continual processes of experiential meaning-making (Evans, 2007; Valsiner & Van de Veer, 2000).

Those evaluations could also be about the perceived quality of performance, as evaluations of people and objects around the musicians were crucial to how they made changes to their understanding of the performance (Brinner, 1995). The following interview extract illustrates how Bridget’s perception of something going wrong in the performance led her to initiate a change in how she was playing:

Bridget: Especially in this rehearsal room ... if you’re playing something, seeing something, and hearing something, and hearing something over there, and when they’re not lining up beautifully with what you’re doing, you start thinking “oh shit”.

As she said this, she demonstrated her playing posture with arms raised as if to play and head faced down towards her music stand, and she pointed with one hand to various parts of the room with each pause in the sentence. Her awareness of how she and the other musicians were coordinating their actions clearly indicates a spatial component to her appraisal of the orchestra’s performance. Her perception that something was wrong was the catalyst for her motivation to change what she was playing. It appears that part of deciding how to make changes to her practice involved evaluating points of reference around her, including

principals, other section members, her sheet music, and her physical playing movements, as explained in the following interview extract:

Bridget: I couldn't really follow what the conductor was doing, and so when in doubt, I thought "ok, I'm just going to go with the concertmaster," and if he's wrong, then oh well ... I've got to focus on playing with my desk partner, who's very reliable, and watching the principals.

It was observed that Bridget was actively looking to her music stand as well as the group of people in front of her, including the conductor, concertmaster, and two principal second violins on first desk. When talking about this moment during the subsequent interview, she described a gradual narrowing of focus as she firstly decided that the conductor could not help her. She then made the judgement that her desk partner and section principals were more "reliable" to her than the concertmaster at this point in time, possibly because the section principals were playing the same part as she was.

Bridget: I was just trying to have my bow move with everybody else, and that was my one thing ... I'm still looking at my part, but my focus is more on my peripheral vision to make sure that I'm with other people in my section.

In this extract, she describes coming to focus more specifically on the movements of her bow and how it related to the movement of the other bows in the second violin section. This accords with the observation that, in the final stages of the rehearsal of this piece, she appeared to be looking more at her music stand. It was also observed that the section had found a way of successfully arriving together at a uniform rhythm. To arrive at an altered performance knowledge (e.g., an agreed way of playing the rhythm), it appears that the musicians first had to engage in a process of evaluating the people and objects around them. They could then focus on those that would be most helpful in achieving the desired performance outcome.

Multisensory constitution of awareness.

Performance knowledge is mediated through the senses, perhaps conspicuously so in the sound-oriented context of musical performance. Far from being dominated by sound, however, performance knowledge appears to operate as part of a multisensory process tied to particular places and activities. The examples provided earlier illustrate that the sensory modes of tactile awareness and the perception of motion and space were also highly present. The musicians' discussions of how they encounter and understand their engagement with their environment appeared to be highly influenced by their spatial awareness. This can be

observed in Bridget's reliance on comparing her bow movement with her colleagues' movements, or the spatial dimension to Fiona's experience of playing the bell-tone passage in the *1812 Overture*. Both of these examples indicate how inter-psychological processes, such as the collective coordination of bow movements, are interrelated with the intra-psychological aspects of performance knowledge, such as spatial awareness (Wertsch & Tulviste, 1992). There is a significant challenge, outlined in Chapter 4, to the assumption that one sensory domain dominates individuals' perception and understanding in specific cultural contexts, for example, so-called European visualism (Pink, 2007) or, in this case, the pre-eminence of sound in music performance. It is held that senses do not operate in isolation; rather, they are experienced as interconnected in their constitution of awareness, contingent on individual circumstances and activity (Howes, 2003; Pink, 2015). Thus, it is put forward here that the participants in this study relied on multiple kinds of sensory engagement with their environment. It appears that they did so to perform, discuss performance, or to assess whether performances were going well or not. This sensorially complex performance knowledge appeared to arise directly from their performance activity situated within particular spatial environments and on particular occasions.

Given the importance of spatial awareness to how the musicians constitute performance knowledge, it is inferred that microgenetic changes in their perception and use of space are related to microgenetic changes in their performance knowledge. This is advanced in the same way that changes to experienced and enacted reality are held to be connected to how individuals reconstruct and reconstrue their subjective understandings of self (Salling Olesen, 2006). As the given examples illustrate, those musicians' spatial construal of performance knowledge was required to change throughout their performance, as musical situations and requirements changed. In those examples, both Fiona and Bridget made evaluations as to which sounds were relevant or useful to helping them for playing their part in the moment. This led them to place greater value on sounds from some parts of the space around them over others. Indeed, Fiona referred to actively blocking out some areas of space and sound altogether. Although Bridget's position in the orchestra allowed her to see almost the entire string section at once, it was clear that she was highly selective in structuring her awareness of that large number of people. Evaluations of the usefulness of another's part, their reliability as players, or her experience and cultural understandings of orchestral practices were all used to influence and form those spatial understandings of the performance. It was also apparent that her spatial structuring of the musical performances around her continually changed and underwent re-evaluation as the music being played

progressed from one situation to another. Hence, a spatial construal of the performance of the orchestra was important to the microgenetic changes in understanding and practice that occurred throughout these rehearsals.

Spatial awareness and cultural knowledge.

The musicians' spatial awareness of performance was also shaped by their cultural knowledge of orchestral performance, that is, their understandings of orchestral practices based on personal experiences and socially shared or negotiated knowledges. In the following interview extract, Fiona describes how the shape of her spatial awareness can be based on her understandings of how particular people or instruments are likely to play:

Fiona: Sometimes you sort of just have to block out the percussion.... I don't disregard melodic instruments, unless there's bad casuals, [speaking quietly] because we get the casuals over this side [laughs] ... we get the back desks of the strings, so sometimes the immediate sound here is not exactly what is up the front, and you do have to do a bit of blocking out sometimes, but not this week.

Her statements in this extract appear to be her opinions about generalised performance practices based on experiences of assessing the helpfulness of percussion players behind her or reliability of the casual string players who occupy the back desks situated close to her seat. Her appraisals of the casual string players and description of "blocking them out" align with other interview and observational data to show that they do not form part of her intentional spatial awareness of performance in this orchestral context.

Cultural knowledge of orchestral performance, for example, how certain people or instruments are likely to play, was also used by the musicians to make concrete, in-the-moment decisions about performance. Figures 6.2a and 6.2b depict the awareness maps drawn by Fiona in an interview during that week. Figure 6.2a is a depiction of a moment in performance that was going well, and this corresponds with the following interview extract:

Fiona: I was just really focused on what I was playing, and I could hear that it was actually with everybody, but I was particularly zoomed in on my part ... it was this section here, like nice clouds, because I was with the strings, and then the conductor's in this picture too, and I wasn't looking at him, I was just listening to the fact that I was pretty sure I was actually with the violins. That's the corridor of violins I was aware of, and a viola player's head. [laughs] ... It was like I almost blocked out everything except my part.

In this map, she has drawn an enlarged (i.e., “zoomed in”) music part on a music stand, an adjoining “cloud-like” corridor of violin sound, and a partial connection with the conductor at the front. The viola section is depicted as a circle that she has scribbled out to indicate she was “blocking them out”. Figure 6.2b depicts a moment that was not going well and was accompanied by the following statement:

Fiona: It was a moment that I was not in the right place, I guess my attention was going to the side and behind me to try and pick up cues of where it was... So that’s kind of more a rabbit in the headlights.

In this map, Fiona has depicted a reduction in the size and number of objects in her awareness, emphasising a directional attention to her side and behind her in her search for useful information about precisely where the orchestra was up to in the piece. Her drawing of a rabbit comically depicts the quality of her awareness, that is, feeling like a “rabbit in the headlights”. It appears that, according to her evaluations of their usefulness in performance, she maximised her awareness of other parts of the orchestra and described her interaction with them. In contrast, there was no mention or observation of her interacting with the viola section back desks, apart from her indication that she was “blocking them out” from her awareness, apparently based, in part, on her understanding of their value to her performance. Thus, her spatial construal of her immediate performance is shaped by her experiences and cultural understandings of her performance relationships with various people and sections in the orchestra.

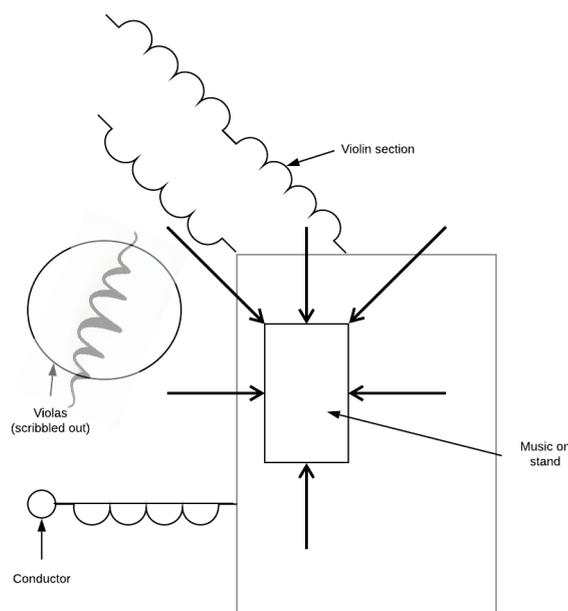


Figure 6.2a. Participant-drawn awareness map: Fiona (cor anglais), “going well” occasion.

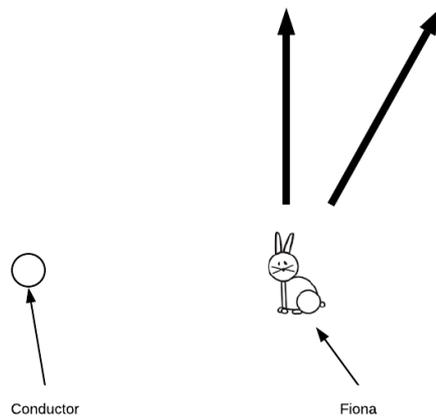


Figure 6.2b. Participant-drawn awareness map: Fiona (cor anglais), “not going well” occasion.

This section has so far given an account of the spatial aspects of the musicians’ awareness, evident in how their performance knowledge reflected the multisensorial way in which they engaged in their work. During interviews, almost all discussion about what the musicians could hear, see, feel, or otherwise perceive included complex and specific details about spatial positioning. This information was not restricted to the musicians’ awareness of their spatial positioning relative to others, as on a map, but was embedded with information about people and things they evaluated as significant or valuable (Pink, 2008). This included the musicians’ appraisals of whether those people were useful or reliable points of reference about how they needed to play. Precisely where a sound was coming from, who was making it, its musical significance to the participants’ own parts, what the other musicians might be able to see or hear, or whether they were responding to the participants’ own contributions and intentions were consistent concerns. The musicians’ understandings of those elements of their environment were capable of being negotiated through performance (Brinner, 1995). This suggests that cultural meanings might be embedded into a multisensory understanding of what was happening in the environment and what the participants needed to do. All of this could occur on a moment-to-moment basis, because the musical situation could change so quickly. Hence, people who, moments ago, were reliable or useful points of reference could quickly become unreliable or irrelevant. It is proposed here that the musicians’ microgenetic changes in performance knowledge are strongly influenced by the ongoing changes to their spatial and multisensorial construal of their environment (Fors et al., 2013). The constitution and reconstitution of spatial knowledge alongside performance knowledge suggests that this

cognition might be considered as both embodied and emplaced (Pink, 2011; Somerville & Lloyd, 2006), and this is discussed in the following section.

Emplaced performance knowledge.

Because of the observed importance of space and place to the performance of orchestral practices, emplacement is advanced here as a useful concept to explain the spatial aspect of orchestral performance knowledge. Emplacement refers to the construal of cultural and embodied knowledges within co-constituted places as they are socially experienced and negotiated (Fors et al., 2013; Howes, 2005; Pink, 2011). This explanation is put forward to account for the spatial knowledge entwined within the performance of the orchestral musicians in this study. It also provides an explanation of the “places” that arose as the individuals moved through and engaged with a space, imbuing it with individual and culturally negotiated meanings (Feld & Basso, 1996). Concepts of space and place are popular in contemporary ethnography (P. Hubbard & Kitchin, 2010), particularly in situations where place is pre-emptively assumed to be important, for example in rural or urban studies (Spinney, 2009). More than giving just relative locational information about space, places are held to be the constructed or co-constructed knowledge of an environment, construed through the meanings and uses that individuals experience within it (Ingold, 2011). Individual and shared understandings of physical environment and personal situatedness are proposed to form another aspect of the social structures that influence the musicians’ perception, their performance of identity, and how they reproduce cultural ways of being (Pink, 2015). In these perspectives, place is a way of constructing an understanding of an environment that is highly contingent on individuals’ physical locations, movement patterns, and responses to the affordances of the environment. Furthermore, emplacement has been identified as a concept that can connect bodily perception, environment, and learning by accounting for how individuals change their knowledge as they act together in particular environments (Fors et al., 2013; Pink, 2011). Throughout the observational and interview data, spatial perception and understanding saturated the discussions and demonstrations of performance within the orchestra. It appeared to be important for the constitution of the musicians’ performance practices and awareness in the moment. It was also crucial to its reconstitution as they continually assessed, refined, and changed their practices. Their evaluations of parts, performances, and people created unique “places” for the enactment of their performance. For each particular situation, the musicians’ performance knowledge was emplaced in and around the physical spaces of their musical and social environments.

Conceptualising orchestral performance knowledge as being emplaced highlights learning processes through an emphasis on the interrelation amongst body, mind, and environment, as discussed in the previous section on spatial awareness. Fors et al. (2013) argue that knowledge about both place and activity is interrelated through use of the senses. Focusing on the sensoriality of individuals' experiences of their environment, it positions individuals' learning as part of "human bodies that become situated and embedded in cultural, social, and material places" (p. 170). In this study, exploring the orchestral musicians' sensory perceptions in relation to their performing activities did indeed make apparent that the changes to their performance knowledge were intimately connected to their sensorial experience of particular "place-events", or situatedness in time and space. The musicians' spatial awareness of people and performances around them had a material impact on how their performances occurred. This awareness was, in part, based on their personal-historical understandings of social and musical hierarchies in their orchestra and cultural knowledge of orchestral practices. Emplacement, in this orchestral context, is how place (i.e., the musicians' socially co-constituted understandings of space) became a part of orchestral performance knowledge, and it is advanced here as part of an explanation for how that knowledge changes.

Within this literature focused on multisensory experience and place, attention is drawn to the specificity of concrete moments and experiences, particularly the sensorial aspects, for their impact on individuals' learning processes (Fors et al., 2013; Howes, 2003; Pink, 2008). The concept of place relies on ecological psychology for its explanation of the "enmeshed" and developing relationship between person and environment, which connects learning with activity in particular places (Gibson, 1986). For example, Stevenson (2014) found memory to be created and enacted in a way that is emplaced through sensorial engagement as a part of activity, such as walking through well-known environments. Movement or activity is held to be important to the construction and reconstruction of sensory knowledge, as static notions "over-determine" the role of place in its creation (Bull, 2004). In the context of orchestral performance, different ways of emplacing performance knowledge arise from the changing activities of the musicians as they coparticipate in performance (Billett, 2002b). In other words, as a performance unfolds, the "movement" that occurs through time as the piece is performed creates changing musical demands for the musicians and a changing emplaced knowledge about the environment they are occupying together and within which they are coparticipating.

During performance, some areas of the musicians' spatial awareness were maximised while, at the same time, other parts were minimised or ignored entirely, creating a place around them that also consisted of "non-places". Non-places are parts of the experienced environment, such as shopping malls or roads being travelled, that individuals encounter but that are ignored, discounted, or excluded from what they consider to be their experience (Augé, 2008; Bull, 2004; Spinney, 2009). The cor anglais player, Fiona, described how she regularly excludes ("blocks out") the back-desk string players from her attention. She indicated that consistently evaluating them proved to be unhelpful to her own activity through either her generalised understanding of their reliability or their relevance to her performance of the cor anglais part. The only occasion on which she discussed them was when directly asked, and they were not brought up with any other discussion of awareness, as depicted in the maps in Figures 6.2a and 6.2b. Although the viola section took up a large area of the orchestral space directly in her line of sight, they constituted almost no part of the place Fiona constructed for her contribution to the performance to occur. Her agentic construal of the viola section as a "non-place" appears to arise from her experiences and interactions with that group in their performance together. This construal emphasises the relational interdependence between her own agency as a member of the orchestra and the social agencies that come from performing together (Billett, 2006; Eteläpelto et al., 2013). For the musicians in this study, their spatial awareness of selected people or instruments and the exclusion of others appears to suggest that this way of constituting knowledge is crucial in transforming their experience of space. That is, in the enactment of their own performance activity, musicians create unique, situation-dependent places that are deeply connected to their performance knowledge and experience.

The experiential aspect of emplacement raises questions about the role of perception in musical performance knowledge. In the last half of the 20th century, the psychological literature on music performance commonly characterised the perception and sensorimotor processes as being directed by the musical judgement of the individual (Hallam et al., 2009; Lehmann et al., 2007; Novembre & Keller, 2014; Parncutt & McPherson, 2002). In this account, cognition is held very much to be occurring "in the head", even when taking into account the social negotiations of practice. The concept of "embodied cognition" has been used more recently to turn this conceptualisation around and demonstrate how the body shapes and provides the conditions for how knowledge is enacted (Geeves et al., 2014; Hager & Johnsson, 2009; Hargreaves & North, 1997; North & Hargreaves, 2008). In a similar way, the emplacement of orchestral performance knowledge through its enactment may also shape

and become a part of the perception and sensorimotor processes involved in that performance. Ingold (2011) has contrasted “building” conceptions of knowledge (i.e., constructing knowledge of a lived reality) with “dwelling” (i.e., immersing in a world through experience and activity). He described this as a division between cognitive, or “in the head”, approaches to sense, meaning, and learning, and phenomenological or ecological approaches that position knowledge as arising from inhabiting, living, and practising. In structuring and forming a performance around the spatial arrangements of other players’ movements and sounds, perception here appears to be more than in the head or embodied: It is part of how these musicians inhabited the performance activity and place itself.

Emplaced activity and perception.

The importance of activity to the inhabiting and understanding of place puts the enactment of performance at the centre of emplaced performance knowledge. The following interview extract illustrates the importance of spatial perception to inhabiting and enacting performance:

Bridget: My whole goal was just trying to have my bow move with everybody else, and that was just my one thing, in the heat of battle.... You start looking out just to kind of grab on to someone, for me it was one of my section principals ... I felt like I was latching onto her.

Bridget’s description of “latching on” to the bow movements of her principal and, subsequently, the highly exact entrainment of her own bow movements suggests that perception and action are more than just separate processes. In being immersed in the activity, and very likely from being immersed in this activity over a number of years, her sense-making of the principal’s activity appears to be directly incorporated into her own performance activity. This does not appear as if a purely perceptual representation of the principal’s movement is being “internally” constructed and then acted upon. Rather, Bridget’s wealth of experience of inhabiting and practising within this environment is embedded within her own activity. This would seem to do away with sense-making as representation-building: “The skilled practitioner consults the world, rather than the representations (rules, propositions, beliefs) inside his head, for guidance on what to do next” (Ingold, 2011, p. 164). Put in the words of ecological psychology, perception and meaning arise not from a static mind acting on bodily sensations, but in body and mind together moving or acting through the world (Gibson, 1986). In their understanding of place, it

appears that these musicians are not reconstructing the world internally but accessing it directly through the body to make it part of their performance.

As individuals' activity and sensory engagement interrelate with coparticipation, sociocultural elements become important to the emplacement of performance knowledge. Grasseni (2004), for instance, describes a "skilled vision" in relation to professional cattle judges, whose judgements are formed by more than just what they can see. Such knowledge comprehends their experiential and cultural knowledge of cattle rearing, animal behaviour, physiology, and their interactions with and expectations of other cattle-industry people. In the same way, when the orchestral musicians in this study listened to others as they performed, they were not just hearing the audible sounds. It appears they were connecting it with what they know of the other musician, what they know of how it feels to play it themselves, and bodily knowledge of what they may have to perform themselves in response to the other's performance.

The cognition referred to here is a complex, in-the-moment integration of sensorimotor processes and culturally constructed knowledge about who is playing, where and how they are playing, and how this changes the musicians' own performance knowledge. In his study on medical students' learning of auscultation, or listening to and interpreting sounds of the body through a stethoscope, Rice (2010) describes the back-and-forth social process of verbally comparing and making meaning from individually experienced sounds. The medical students' understandings of the sounds of the body were continually adjusted through their collective participation in negotiating which parts of the sound they were identifying and relating them to the practice of sharing medical knowledge of the body. Similarly, to come to an agreed way of playing the musicians in this study, each with uniquely emplaced performance knowledge, negotiated which sounds or movements were important through interdependently adjusting their playing. They each adjusted their immediate sounds and playing intentions to an environment of people who were "acting back". Microgenetic changes in performance here appear to occur relationally between perception, with its associated engagement with place, and socially shared patterns of use. In other words, the emplacement of performance knowledge forms part of how musicians co-constitute performance together. Through doing things in an agreed, similar way, similar modes of perception and meaning arise, suggesting that "shared" culture is part of the emplacement of musicians' performance knowledge.

Emplacement is considered here to be an important way of conceptualising the contributions of sensory awareness, activity, and sociocultural factors to orchestral

musicians' performance knowledge and how it changes. The purpose of deploying such a term is to draw attention to the enmeshed nature of perception, action, place, and activity. This is similar to the way the term "embodiment" positions knowledge as arising from enmeshed psychological and physiological processes. However, Ingold (2011) notes an issue with the term embodiment that may also indicate that the concept of emplacement contains limitations. In attempting to make explicit the inclusion of the body in cognition, considering knowledge as embodied once again separates and subserviates the body to the mind. He suggests that the term "enmindment" may as well be used to indicate the inclusion of cognitive processes in bodily functioning. Either term proposes a dualism between body and mind, rather than seeing them as a single thing that acts and grows in an environment. Understanding musicians' performance knowledge as emplaced is proposed here to successfully connect perception, understanding, and activity. In the attempt to demonstrate relationality between musicians' knowledge and its physical and social context, it may unwittingly create its own dualism between the personal and environmental elements it seeks to unite. Nevertheless, emplacement is a conceptual tool that is capable, at the very least, of pointing out how individual and social ways of understanding place interrelate with performance activity and knowledge.

In these sections on the spatial dimensions of learning, it is proposed that orchestral performance knowledge and its development can be described as "emplaced", that is, it is reconstituted around physical spaces imbued with culturally constituted meanings. By highlighting how musicians' knowledge is co-constituted through the interrelation amongst body, mind, and environment, it becomes apparent how a changing understanding of place can shape microgenetic changes in performance. As the musicians in this study encountered changing understandings of place, their performance knowledge appeared to change according to the concrete moments and situation-specific details of their sensory experience. Accordingly, the musicians actively maximised their awareness of particular musicians and places at different times and minimised their awareness of others, creating person- and situation-dependent places connected to their own activity and agency. The musicians' immersion in the spatial aspect of their activity suggests that their spatial awareness is a crucial aspect of their performance knowledge. So too are the culturally negotiated understandings of place that arise from the musicians' continued coparticipation in orchestral performance. At the risk of creating an unnecessary dualism between individual and environment, emplacement is advanced here as a way of describing how musicians

experience the spatial aspect of their performance activity and how their knowledge develops and changes around it.

Co-creation of a performance environment.

Through these explanations of the temporal and spatial dimensions of how musicians' performance knowledge changes, it is put forward here that microgenetic learning is evident in how musicians co-create a performance environment together. The following vignette, taken from observations of rehearsals for a ballet production of *The Nutcracker*, illustrates how these elements combine and provide the conditions for microgenetic learning to occur. Rehearsals for the 2-week run of performances are scheduled over 3 days prior to opening night, and the first day's rehearsal occurs in the orchestra's regular rehearsal studio. The string and wind sections are set up at the front of the studio and the timpanist and Evan, the sole percussionist in this program, are set up behind them. The percussion instruments, including bass drum, snare drum, bells (i.e., glockenspiel), and traps tables (i.e., tables holding auxiliary percussion instruments), are arranged almost in the shape of a hollow square with a music stand on either side, as depicted in Figure 6.3.

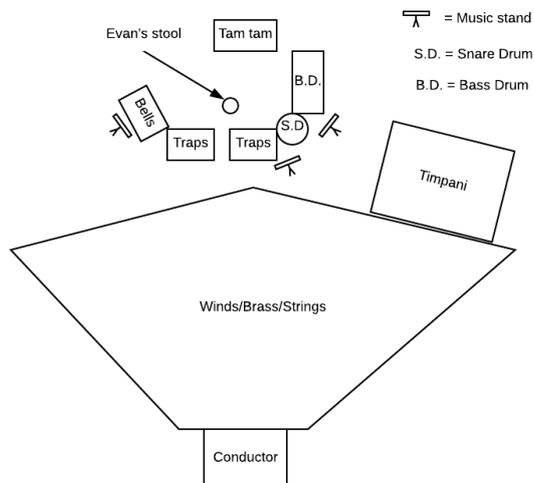


Figure 6.3. Ballet percussion setup, rehearsal day 1.

The concertmaster tunes the orchestra and the conductor calls out which movement they will rehearse. They play a waltz movement, and Evan has only a few soft entries. He spends most of his time counting rests and looking between his music stand and the front of the orchestra. In one hand, he is holding a bass drum beater and, in the other, one crash cymbal, which he is holding close to its pair mounted on a stand, so he can play both instruments simultaneously. Prior to playing each entry, he looks at the beater and the cymbal and adjusts their position, adjusts his standing position, looks at the music stand and then

down at the conductor, and checks all of these again before playing the entry. When he has a longer rest, Evan walks around the setup and adjusts the angle of the bass drum. During small breaks throughout the rehearsal, he takes some instruments to the back of the hall, brings others forward to replace them, and makes some adjustments to their arrangement.

The following day, the orchestra is rehearsing in the theatre venue. To allow more room inside the orchestra pit proper, the timpani and percussion are set up in an adjoining storage room that extends underneath the stage, as depicted in Figure 6.4. Evan can see the conductor and some of the orchestra through a connecting window directly in front of him. The orchestra starts the overture and Evan plays his entries, then looks through the pages of his part. The next movement is fast, and Evan picks up the triangle and plays a segment of continuous crotchets. He appears to play ahead of the beat throughout the movement, his notes almost sounding in front of where the strings are playing. The timpanist joins him, and they work together, both playing very “forward” of the beat. In the following slow movement, Evan is still playing triangle, but on occasional off-beats. From my informed observer’s perspective, he appears to be pushing and pulling how early he arrives on the note in relation to the strings, adjusting it with each entry until he finds a consistent approach.

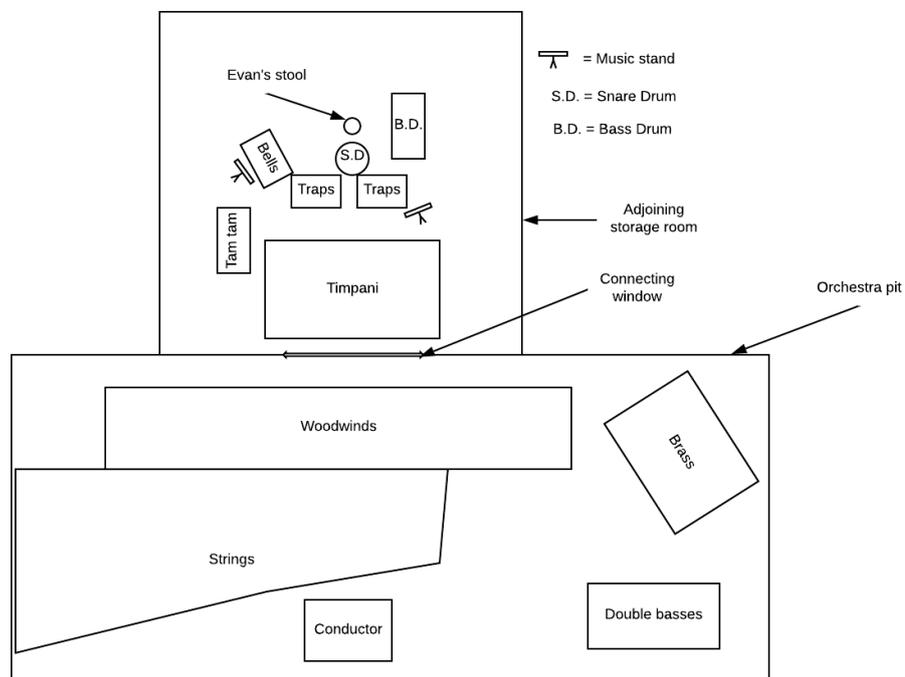


Figure 6.4. Ballet percussion setup, rehearsal day 2.

For the final rehearsal on the third day, Evan arrives early to move his instruments. It transpired the night before that the conductor had requested the percussion to move inside the orchestra pit itself for the final rehearsal because it was not loud enough when positioned in

the storage room. The long, rectangular shape of the pit has dictated a quite different arrangement of percussion instruments, as depicted in Figure 6.5, and the move has required one side of the orchestra to rearrange their positions. Prior to the rehearsal, a member of the trombone section makes some complaining remarks to a trumpet player about additional noise and reduced space. Evan and the timpanist confer in the pit, looking at their parts and writing in them, before the timpanist walks back around to the storage room for the start of the rehearsal. The rehearsal begins and Evan divides his time evenly between playing his entries, counting rests, and rearranging equipment. The woodwind and brass who had to move also continue to reposition their seats and stands as the rehearsal goes on. The orchestra finishes the act and a break is called. The trombone player talks to Evan, pointing at the cymbals and covering his ears, and they continue talking as they leave the pit together.

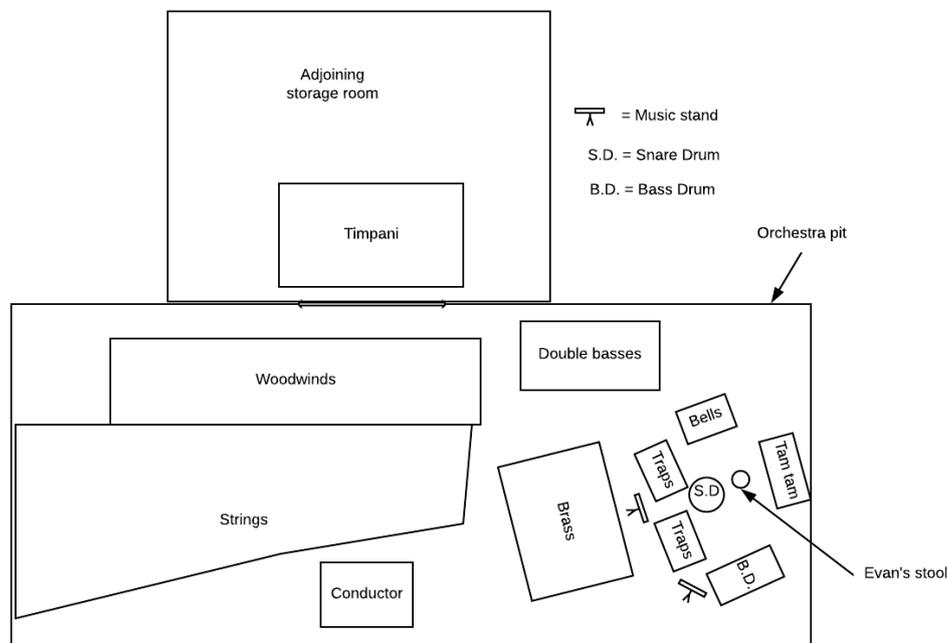


Figure 6.5. Ballet percussion setup, rehearsal day 3.

These different scenes observed during three consecutive days of ballet rehearsal illustrate Evan's continuous learning processes that occurred as he continued to change his practices and create changes in the orchestral environment. In the description, there are some large-scale changes to the environment, such as moving to a new rehearsal venue or location within the orchestra. There are also more subtle changes, such as fluctuations in tempo and changes to how Evan interacts with different members of the orchestra. The processes of rehearsal described in Chapter 5, including awareness, communication, evaluation, and planning of playing intentions, all contributed to the adjustments to performance that Evan

and his colleagues had to negotiate and enact (Brinner, 1995). Evan appeared to construe and reconstrue his performance knowledge according to the time limitations and spatial arrangements he encountered throughout the rehearsal. This suggests that, even for different situations within the same orchestra, microgenetic learning processes were a continuous part of maintaining an effective way of engaging with the orchestral environment throughout the week and across changing spatial conditions.

The major changes Evan was required to make to his instrument layout and position in the orchestra required an ongoing effort of adjusting and remaking the conditions for the performance to occur. In the following extract from the interview after the first rehearsal, it is apparent that making performance adjustments based on the spatial aspect of his awareness was already a priority:

Evan: I'm taking in how people breathe, how people play ... the conductor - to an extent.... in this one I'm focusing on the winds, but also taking into account that I'm very far away. The first [cymbal crash] was probably pre-empted a little bit too much, and then I adjusted it.... I am pretty much listening to where they are placing their notes, and I'm slightly ahead.

In this extract, he notes that his distance from the wind players requires particular kinds of adjustments to be made. From an informed observer's perspective, it was apparent that he was still adjusting his rhythmic ensemble with the winds in the rehearsal on the following days. It appears likely that the need to continue making changes arose from working within the new acoustic conditions, distances, and conditions of visual contact with his colleagues.

Adjusting the physical environment.

It was not just rhythmic ensemble accuracy that required adjusting with these circumstances. Evan and other members of the orchestra continued to rearrange their positions and the objects and instruments in their peripersonal space, that is, the space immediately within their bodily control.

Evan: This setup is sort of like a first run, so to speak, so when I get there, I'll check a few things. So, this [points at bells] will probably be to my right, this [points to traps table] will probably be my main focus because there's a lot of triangle, and there's quite a lot of bass drum and cymbals.

In this interview extract, Evan indicates an expectation that adjustments to his positioning of equipment will continue throughout the rehearsals as they move into the performance venue. When the percussion was moved into the orchestra pit on the third day, the repositioning of

equipment and its associated adjustments to performance practice was not just required of the percussionist. String, woodwind, and brass players were all observed to continue adjusting their positions as they performed during the rehearsal, rearranging their chairs and equipment and checking whether they could still see key personnel. Several musicians also exhibited concerns about noise levels, both before and during the final rehearsal. This almost certainly changed the performance environment for those affected, and, as observed in the scene, discussions and negotiations about the impacts of the reorganisation of space were ongoing amongst Evan and members of the other sections. Thus, social considerations, such as the reactions and negotiations with other musicians, were part of the intentional refinements and changes Evan made to his understanding of how to engage in the performance of the piece throughout the rehearsal process.

The observations and analyses made here suggest that Evan and his colleagues made ongoing and effortful changes to their understanding of the performance environment around them and how they performed within it. The rearrangements of spatial position had impacts on the ensemble's performance practice, requiring the musicians to make continuing changes to their individual spatial arrangements of equipment and bodily positions. This occurred over three day's rehearsal, in which the musicians made these changes in a fragmented, nonlinear way. Nevertheless, they rehearsed in a manner that allowed them to negotiate through those moments towards an agreed way of performing together. From examining how they negotiated a shared idea of performance through these spatial and temporal conditions, it appears that these musicians were creating together not just a performance, but a performance environment. They were actively involved together in the ongoing shaping of the physical space. They also adjusted their playing together within this environment, in other words, co-constituting and continually emplacing their performance knowledge as they worked towards an agreed way of performing. Thus, it is advanced here that these musicians can be described as co-creating their performance environment as they engage in their shared labour.

The concept of co-creating a performance environment involves the musicians making use of the spatial dimension of their performance knowledge as well as nonlinear and directional microgenetic changes in shared practice. Evan, during the ballet rehearsal process, performed the same part in the three rehearsal locations, but the activity and the emplacement of performance knowledge in each was different. It also required different awareness of and adjustments to other musicians and the changing environment. This may support the idea that, whilst engaging in an activity, salient objects can become factors for organising knowledge (Scribner, 1985). This could occur, for example, in adjusting performances

according to the musicians that are positioned closest. Directionality in the enactment of performance knowledge is still apparent over these rehearsals, even over several occasions that were temporally distant, as well as spatially different in this case. Particularly relevant to how performance knowledge can change in this context is the conceptualisation, argued by Ingold (2011), that place is not understood by individuals as a location, as if it were a point on a map looked at from above, but is known as a region they have passed through. That is, the knowledge of a place is constructed through the senses and through action to create a knowledge that arises from a “historical context of journeys made” (p. 219). This concept describes knowledge that changes with each new experience of the same activity. The implication in this context is that activity, or the musicians’ enactment of orchestral performance as they co-create their performance environment together, is a factor that influences change in each musicians’ knowledge of both place and performance.

To outline the concept of co-creating a performance environment, the spatial and temporal characteristics of musicians’ microgenetic learning explored in this chapter are proposed to underpin how they co-create their performance environment together. By making use of the spatial arrangements they encountered, the musicians in this study continually adjusted their physical environment and their performance within it. These adjustments of environment and performance were co-created, as the musicians continued to react to each other’s changes and bring their performance closer to a shared idea. The adjustments also occurred in the nonlinear and directional manner elaborated earlier in this chapter, taking place within the time limitations of a small number of rehearsals together. From these observations, it is proposed that the orchestral musicians in this study agentically created a performance environment. This was achieved through the use of their physical and social surroundings, developing their shared performance together through each rehearsal.

Summary of microgenetic learning processes.

This section on microgenetic learning has explained how moment-by-moment changes in the musicians’ performance knowledge were found to arise as they engaged in orchestral work together. As they encountered different schedules of rehearsals and performances, they adapted their playing intentions in fragmented and nonlinear ways across these occasions, as their shared efforts could not occur outside of those occasions. By negotiating their collective performance through those moments, their changes in performance knowledge maintained a directionality that allowed them to work towards a shared idea of performance. Spatial awareness was also found to be a substantive aspect of

how the musicians' performance knowledge was organised and expressed. It is advanced here that the term emplacement describes how their performance knowledge was constituted and reconstituted around their spatial awareness and socially constituted places within the orchestra.

It is further proposed that, as they engaged with these spatial and temporal aspects of their work, they co-created a performance environment, collectively influencing the microgenetic changes in their performance knowledge. As the sustainability of musicians' careers over longer periods is of current concern to this community (Ascenso et al., 2017; Dobson, 2010a; Teague & Smith, 2015), it is important to understand how these instances of microgenetic learning contribute to long-term developmental processes. How these contributions occur in individual musicians' abilities and understandings of performance is addressed in the following section.

Ontogenetic Development: Changing Understandings of Career Trajectories and Sustainability

The orchestral musicians in this study were found to change how they explained their career trajectories according to the working environments in which they were immediately surrounded. It is proposed here that these changing reconstitutions of the musicians' personal history may affect their ontogenetic development through influencing their perceptions of their own well-being and career sustainability. Ontogenetic development is the broad pattern of change in individuals' knowledge and abilities over the course of a career or lifetime (Wertsch, 1985). In the context of workplace learning, this long-term development is held to be constituted through the myriad instances of microgenetic learning experienced in their daily coparticipation with others in working activities (Billett, 2002b; Vygotsky, 1997; Wertsch & Tulviste, 1992). The participants in this study isolated specific events, such as particular interactions with colleagues and experiences of musical performance, to structure and explain their developmental narrative. This often occurred in a way that reflected their experience of their current working environment. On some occasions, they reconstituted their developmental narrative in a positive way, displaying optimistic understandings of their past and future performance career. On other occasions, negative perspectives of their career trajectories were presented. It is advanced here that these experiences may have an impact on the musicians' ontogenetic development by influencing how they interpret and enact their current performance abilities and practices.

In this study, ontogenetic development is identified through the participant musicians' interpretations of changes in their own playing, attitudes, or approaches to performance. It is not within the scope of this study or its methodology to capture and make judgements about the development of professional musicians' abilities across their career. At the elite level of performance in which this professional orchestra operates, it is considered that judgements about changes in performance quality are best left to the musicians themselves, particularly in the context of this study and dissertation. Accordingly, the identification and analysis of developmental processes are drawn from participants' own evaluations and explanations. These data were collected in interviews that focused on their personal narratives and understanding of how their playing has changed over periods of their working lives. The findings about positive and negative construal of performance are based on the participants' own selection, reconstitution, and presentation of their performance histories.

Connections between developmental narratives and current experiences.

In discussing the narratives of their playing and development, the musicians in this study often isolated and made use of particular personal-historical incidents, imbuing them with a high level of importance in explaining and exploring their current performance. Those developmental narratives appeared to be remade according to changes in how the musicians judged their current performance or working environment. Over the course of 18 months, there were sometimes substantive differences in the incidents the musicians chose to tell and the tone of their conversation. These choices appeared to be related to the musicians' attitudes towards their current working activities and evaluations of their performance. This is to say, they appeared to present more positive narratives when they were playing a program they enjoyed or in which they appraised their performance positively. They also presented more negative narratives when engaged in working activities they did not enjoy or when they were encountering difficulties in performance.

Isolating memorable events.

The musicians in this study frequently isolated musical experiences or events, that is, both playing and exposure to others' playing, and used these events to explain major periods of change in their performing careers. The following interview extract illustrates how recalling particular performance experiences allowed the musicians to evaluate how their playing had changed over the course of their career and to justify their current approaches:

Chris: I've been completely subservient to the person next to me, the people around me, completely "my playing is not my own, it is the section's" ... I've gone the

opposite, where I've just gone "right I'm just going to smash it out, play every note like my life depends on it"... And I honestly have to say that there's a time for everything, and at this stage I don't know, when I walk in tomorrow, what I'm going to have to do on that day.

In this interview extract, Chris, a rank-and-file double bass player, recalls particular kinds of playing or performance approaches in which he has engaged, and indicates that these inform his current attitude towards maintaining a flexible approach to working with his section. Although they refer to approaches that he may have adopted on multiple occasions, his vivid descriptions of playing intentions suggest he may be recalling single occasions that symbolise to him those two different approaches.

Chris: I'm getting better at it, because, with the experience, you know when to make that decision, who you have to be on that day.... I've been both extremes as a player and none of them work 100%, but there's everything in between.

In this extract, Chris positions his current approach against those two "extreme" scenarios, evaluating the experiences as being flawed but, ultimately, useful to him now. This example is illustrative of how the musicians used their historical experiences of playing to explain their long-term development in capability or approach to performance.

Some of the incidents that the musicians isolated and recalled to present developmental narratives were conversations and social interactions related to or taking place around working environments. In the following interview extract, Allan, a trumpet player, describes connecting previous interactions with colleagues with the development of his attitudes towards performance:

Allan: They probably don't even know it, but a couple of trumpet players that I worked closely with talked a lot about percentages and perspective, and I remember them talking to me about that years ago, and I was just like "whatever, if I split a note I'm devastated" ... but it's really sunk in now that it is about percentages, and think that the more I've let go from that "must be perfect" ... the better the result.

In this interview extract, it is unclear whether Allan is referring to one conversation or many. However, his recall of discussions about the metaphor of "percentages" in music performance, understood here to refer to allowing a small percentage of "wrong notes" (Brodsky, 2006), is identified as an incident that he came to remember and ascribe significance to later in his career. It is indicated that he has reconstituted the value and importance of this conversation in the years after it occurred and presented it here to illustrate

his change in attitude. It also establishes how his current understanding of orchestral performance aligns with those of certain mentors, as indicated in the following extract:

Allan: Mentors that I've had that have been in jobs for a while, they have perspective and they have a longer term view. It doesn't mean that they don't care, and their standards are high, it's just that they have perspective.

As was observed during fieldwork observations, a conversation such as this is as likely to occur in a green room or café as it is in the middle of a rehearsal. It was elaborated in Chapter 5 how these conversations formed part of the intersubjective influences on the participants' attitudes and approaches to being a professional orchestral musician. The recalling and reconstitution of this incident indicates how similar social interactions can become important to orchestral musicians' approaches to performance.

It became apparent over the course of conducting the fieldwork that the same musician could present their developmental narrative in different ways on different occasions. In the following interview extract, this participant refers to the same incident of passing her trial but uses it in two contrasting presentations of developmental narrative. Her pseudonym and instrument are withheld here, as this topic is considered highly sensitive in the professional orchestral community.

Participant: [When] I first got a contract with this orchestra ... I was pretty young and gung-ho, and my section made me feel like I was playing really well, and everyone seemed to like my playing.... [There was] a total of four times that I haven't gotten a job that I had been doing.... Somehow, I managed to win [this] audition, and then pass my trial. And I still think about it and I'm like "how did I even do that?" ... you go on thinking you're amazing, and then all these things happen that show "actually, no" [short laugh].

In this interview extract, the participant presents a narrative in which several failed auditions and trial contracts were described and woven into a story of decreasing confidence and certainty about her performance ability, even after being successful in her current position. In the following extract from an interview conducted 9 months later, however, the same participant presented a different kind of narrative in response to the same question:

Participant: As soon as I passed my trial, I just relaxed, and my playing actually got heaps better ... there's no real measurement of that. Maybe it's the same or even worse, but I'm feeling better and not stressed about it.... We haven't had any particularly scary repertoire in that period either for me ... I'm sure it's benefited from me relaxing about it.

In this second extract, she makes reference only to her successful audition and comfort with current performing conditions rather than her more difficult or disappointing experiences related on the previous occasion. The narrative presented is different, describing a particular direction of improvement in both performance and enjoyment of working activities, albeit with reference to the difficulties she has also experienced. These excerpts illustrate that the musicians' sense of self or purpose as a performer, as well as current appraisals of personal situations, are important factors in personal narratives related to careers in the creative arts (Reid et al., 2016). Furthermore, the examples illuminate a relationship between the experienced past and present, where one is used to create meanings of the other (Gergen, 2009). These examples demonstrate the different ways in which these orchestral musicians could select incidents from their personal history and present different narratives for the development of their performance.

Connecting past and present experiences.

The immediate context in which the musicians presented these different narratives appears to be important to the direction and tone of the story. For example, the musicians' positive construal of their personal history was often presented during weeks in which their working situations were considered enjoyable or "good".

Bridget: I don't think I had a clue when I first started ... I've definitely become more comfortable.... I went through my trial and everything, it was fine ... it kind of gives you verification that yes, you are a good section player, and yes, you can play.... I've definitely relaxed because now I know that I'm doing the right thing,

The interview from which this extract was taken occurred during a week that Bridget, a rank-and-file violinist, appeared to regard positively. During this week, she was observed to arrive at work early to practise her parts from the concert program and take some home with her. She also discussed the performance difficulties they posed as if they were challenges within her means of addressing. Bridget also expressed satisfaction in working with a desk partner for whom she had particular esteem and, overall, she exhibited very little evidence of dissatisfaction in the rehearsal observations or interviews recorded during that week. The narrative that arose from the interview about her development was accompanied by indications of satisfaction with the working activities of the weekly program and her level of performance. These observations indicate that there may be connections between her immediate experiences of satisfaction and trust with her colleagues and performance and her construal of how those states of mind developed through her career to date.

In contrast, negative construal of developmental narratives appeared to occur during difficult or “bad” working situations. In the following interview extract, Bridget’s negative construal of her attitude towards her work is notably different from her previous statements:

Bridget: It’s really funny how your attitude changes. At the start of my trial, I was practising so hard and getting all worked up ... it’s not every week that I get challenged.... I enjoy teaching and I do actually enjoy practising, and I hate being in a rehearsal and not being able to play, I feel like a total phony.... I’m not in love with the instrument anymore. I don’t know if I was ever in love with playing the instrument or whether it was just that I was wanting to achieve something in it.

In this interview extract, Bridget gave many indications, verbal and non-verbal, that she was experiencing a level of dissatisfaction with her work and her playing in general. It was also apparent from observations and interviews that there were a number of factors about her current working situation that she found unsatisfactory. The orchestra was playing in the orchestra pit for a ballet during this week, which is commonly an unpopular and stressful work activity amongst orchestral musicians (Kenny et al., 2016). Bridget indicated that she found sight connections with her principals very difficult, particularly as the seating arrangements in the string sections changed for every rehearsal. She pointed out that this became a particular challenge when she was not seated near the key people on whom she regularly relied for accurate information. She also related that her parts had lots of printed errors and had been re-orchestrated with a large amount of uncharacteristic passages for her instrument that were very difficult to play.

Bridget: That rehearsal and the two rehearsals yesterday have been horrendous, because the music’s not very easy, and it’s just rushed and it all just feels awful.... I feel I played worse today than I did yesterday, like it’s gotten worse.

The pessimistic developmental narrative Bridget presented occurred during this week in which she disliked the conditions of her current working activity. It was also a time during which she was experiencing a level of dissatisfaction with her performance and motivation, and it appears that the salience of these factors influenced the kind of narrative presented about her development.

The current performance environment encountered by the musicians in this study appeared to be connected to the kinds of narratives they portrayed about their development. This may be because their current situations are highly salient to them at the time but may equally be related to the meanings that both past and present have for the musicians’ subjectivities, or understandings of self (Evans, 2007; Gergen, 2009). The co-occurrence of

negative narratives during difficult times and positive narratives during more satisfactory working activities strongly suggests this connection between current performance environment and developmental narrative. Feelings and evaluations about working situations were often shared and compared during informal conversations with colleagues, for example, during tea breaks. In the example related above, Bridget was engaged in several break-room conversations in which orchestra members aired their complaints to each other about the difficulties of the music and the working conditions in the pit. The attitudes she described in interviews appear to reflect the tone of those conversations. It is likely that the social and situational factors encountered by the musicians are salient to those individuals when they construct a narrative that bridges their past and present. In doing so, they are creating a particular range of interaction and engagement with remembered experiences. Hence, the musicians' auditions and trials could be regarded as a building experience in one week and could be regarded as a traumatic experience in the following week, depending on their interactions with their current performance environments. Intentionality appears to play a role related to this pattern of engagement, as the same recalled events and current experiences become part of the musicians' "dialectic of acceptance, resistance, and manipulation" (Ezzy, 1997, p. 432). Such changeable reconstitutions of their historical-narrative understanding of themselves are, thus, associated with whether they appraise their work circumstances as "good" or "bad". These fluctuations in the musicians' experience and construal indicate how dynamic their perception of their development can be and how such development can be nonlinear, inasmuch it is contingent on nonlinear experiences of everyday situations.

This section has explained how the participants isolated particular experiences of past musical performances and social interactions to explain how their current attitudes and approaches to performance had developed. The musicians were found to present different developmental narratives on different occasions, even if they made use of the same personal-historical events in their explanation. The musicians' presentation of positive or negative developmental narratives appeared to be connected to their appraisal of their performance environment at the time. For example, positive narratives could be presented in "good" weeks and negative narratives during "bad" weeks. It appears likely that the salience of the musicians' current performance environment was a key influence on the kind of developmental narrative they presented. It is suggested that this is because it was a process in which they were connecting past and present experiences (Ezzy, 1997). The next sections of this chapter elaborate the characteristics of positive and negative developmental narratives and how they relate to the musicians' well-being and career sustainability.

Positive developmental narratives.

There are at least three aspects of orchestral work that may create conditions for musicians' developmental narratives, positive or negative, to influence their current and future performance abilities and, hence, their ontogenetic development. Firstly, the stress associated with extremes of distress and boredom experienced in orchestral work (Parasuraman & Purohit, 2000) and injury (Rickert et al., 2013, 2014a, 2014b) may have an impact on how musicians appraise the sustainability of their future involvement in the workforce. Secondly, attitudes and approaches to orchestral work are shared and negotiated amongst the musicians involved, with the gradual awareness and enacting of roles within a group (Chaiklin & Lave, 1993; Cottrell, 2004; Coulson, 2010; Hager & Johnsson, 2009; Hager et al., 2012). Thirdly, the significant amount of surveillance musicians experience from their colleagues during audition and trial periods would seem likely to increase the intensity of external critique becoming internal criticism (D. Bennett, 2007; Gaunt & Dobson, 2014; Watson & Forrest, 2014). The connections amongst developmental narratives and these three aspects are explored in the following sections as they relate to both positive and negative reconstitutions of developmental narratives. It should be kept in mind that the musicians in this study were found to be capable of presenting both positive and negative developmental narratives in different situations and were not necessarily consistent in their explanations of their own development.

Injury, stress, and anxiety.

The first aspect of orchestral work that was present in the musicians' developmental narratives was personal experiences of injury, stress, or anxiety. Orchestral work is known to be associated with a large number of potential stressors (Piperek, 1981b; Sternbach, 1995). However, the positive developmental narratives presented by the musicians in this study often either acknowledged those stressful experiences balanced alongside positive experiences or presented them as a catalyst for improvement. One particular aspect of orchestral work singled out in the literature as a significant stressor in elite-level performance is the distress associated with prolonged exposure to criticism from colleagues and the public (Ackermann et al., 2014; Brodsky, 2006; Cohen & Bodner, 2018; Parasuraman & Purohit, 2000). All participants in this study were emphatic in describing the high levels of distress of this kind that they experienced during their audition and trial periods, as illustrated in the following interview extract:

Allan: I hated my trial [short laugh], mostly. I just found it really super stressful.... Looking back on it now, I see that it was good for me in a way ... I think it's given me some strength that I'll now be able to put those kinds of situations into perspective.

This extract is from a distinctly positive developmental narrative and is typical of how Allan and other participants acknowledged stressful experiences whilst portraying them as critical to the development of their current positive situation. Multiple large-scale surveys of stress in orchestral populations have returned mixed findings about who experiences stress and how it is caused (Fishbein et al., 1988; Haider & Groll-Knapp, 1981; Halleland et al., 2009; Holst et al., 2012), ultimately indicating that stress occurs in ways specific to each unique orchestral workplace. The examples showing positive responses to challenging experiences of stress or injury appear, then, to be contingent on person- and situation-specific factors.

Acknowledgement of negative experiences also often extended to embracing the stressful experiences that were likely to arise in the future and balancing them with positive experiences, as indicated in the following extract:

Allan: How boring would it be if you had everything sorted out? Well, then you'd probably want to do something else anyway.... This is my fifth year... and I feel great in the orchestra. I'm really, really enjoying it.

Based on a positive reconstruction of his developmental narrative, Allan projects and embraces here a future that will have both good and bad experiences as part of his development as a performer. Acknowledgement of stress, anxiety, and injury is held to allow higher likelihood of musicians using adaptive and positive coping behaviours, such as seeking timely clinical interventions (Araújo et al., 2017; Rickert et al., 2014a; Steptoe, 1989). Comparing this argument with the participants' developmental narratives that include these acknowledgements would appear to suggest that those musicians may have an increased likelihood of maintaining healthy working practices into the future.

Developing social inclusion and trust.

The participants presenting positive developmental narratives also expressed an understanding of a second aspect of orchestral work, namely, the difficulties or slowness of finding acceptance within their new orchestra. New members of orchestras must negotiate often rigid social and musical hierarchies (D. Bennett, 2008) which, in prestigious artistic institutions, are regarded as being closely tied to the high social and musical values that are placed on them within the industry and the wider civic community (Cottrell, 2004;

Kingsbury, 1988). Participants' positive reconstitutions of personal development often included an acknowledgement of the difficulties of developing interpersonal associations and common ways of playing with colleagues in these circumstances. The following extract illustrates the expectation of a gradual social inclusion demonstrated by those participants who were new to the orchestra at the time of their audition and trial:

Allan: I used to feel very keenly the sense that I was new, and even though I was one of the leaders of the brass section ... I still felt, on a personal level and a professional level, that I was new, and that just takes time.

Some participants who had been working with this orchestra for some time before they acquired their permanent positions appeared to adopt an "old-timer" position more quickly (Chaiklin & Lave, 1993; Lave & Wenger, 1991). However, this still came with the acknowledgement that it took a long period of association with these players, as illustrated in the following extract with the percussionist, Evan:

Evan: I was always very receptive to finding out who was doing what, how their sound was, and then trying to blend with those sounds to make my own sound.... I've got different techniques to my principal and [the others] ... so you get a collective sound that eventually becomes your own.

This interview extract is indicative of the long and gradual processes for negotiating intersubjectivities (Rogoff, 1990) regarding social and musical relationships. It also demonstrates that intentionality is important in finding appropriate ways of developing an awareness and embodiment of procedural knowledge within the orchestra's collective activities (Hager et al., 2012; Nicolini et al., 2003). It appears that positive developmental narratives embraced an understanding that newcomers and their colleagues must negotiate understandings of who they are and the value of their contribution to the orchestra's performance. It also appears that this process can continue for a long time and amongst unique interpersonal situations of each orchestra.

Coping with social scrutiny and critique.

The third aspect of orchestral work important to developmental narratives, surveillance and critique by colleagues, was described as a highly stressful and difficult experience by all the participants. However, positive developmental narratives often included musicians' responses to their collegial relationships that allowed for strengthened abilities to perform under scrutiny.

Allan: I found [my trial] difficult. However, I persevered, and I tried, I took on board the feedback that I was given at the time.... I passed my trial and I felt really good about that.

In this interview extract, Allan uses the difficult experiences of being under scrutiny from colleagues during his trial to explain his developing ability to respond to criticism. Stress associated with criticism was certainly not exclusive to the musicians' trial periods, and there were often similarities in the way they presented their responses to criticism both during and after trials:

Allan: I think it's when I started to seek more advice from others about my playing, that I realised that I can use constructive criticism to my advantage, and that mind change, it changes your whole approach to it.... As opposed to defending myself against the up-and-coming repertoire, to be embracing the up-and-coming repertoire ... It's a "going to" approach to playing the trumpet, and I think that's what's changed.

In this interview extract, Allan links his relationships with his colleagues, particularly their critiques of his performance, with his approaches and abilities in subsequent performance situations. He describes his attempts to turn an uncomfortable experience of criticism into something more helpful to his immediate performance, perhaps taking an expansive view similar to cultural theories about social critique. In this literature, comments, critiques, and reactions amongst members of a culture are seen as social techniques for reinforcing "acceptable" protocols, values, or expectations (Gillin, 1948; Johnsson & Hager, 2008; Merriam, 1964). The musicians in this study all acknowledged the immense difficulties of performing whilst under scrutiny. However, incorporating the ongoing realities of continuing critique as part of their collegial relationships into their expectations and attitudes appeared to assist them in creating a positive view of their trajectory in performance ability.

Positive developmental narratives appeared to include both the musicians' positive and negative experiences in a way that either balanced them or provided conditions in which their performance ability could respond and develop. The musicians telling positive stories connected the difficulties of surveillance, criticism, and high expectations with being able to change attitudes to performance and, hence, to changing their abilities to perform in difficult circumstances. However, those musicians also saw relationships and ongoing interactions with colleagues as crucial to their development. Within the social and musical structures of the orchestra, negotiating the quality and value of individuals' contributions to the group's performance played a large role in musicians' understanding of their performance abilities

(D. Bennett, 2008; Gaunt & Dobson, 2014). Relationships and interactions with colleagues that went beyond the boundaries of their particular orchestra were also important, as indicated in this following interview extract:

Allan: I did really struggle the first couple of years, just feeling adequate enough, worried that I wasn't good enough ... moving countries and starting again and not having close friends or family around, that made me realise how important those things were.

In this extract, Allan emphasises the importance of personal relationships, and his frequent references to mentors and friends outside of this particular orchestra indicate a certain diversity in those relationships. Overall, the musicians' positive developmental narratives included both success and failures as part of their past experiences and anticipations for their future activities. They also recognised the importance of personal and musical relationships to their own performance ability.

This section has given an account of positive developmental narratives presented by the musicians in this study. These narratives often included, firstly, an acknowledgement of the stresses the participants had experienced and the possibility of unpleasant experiences in the future. This suggests a likelihood that they will be able to cope better with future encounters of stress, anxiety, or injury (Araújo et al., 2017; Rickert et al., 2014a). Secondly, positive developmental narratives also often contained recognition of the difficulties and slowness of gradually becoming an accepted member of a new orchestra (Chaiklin & Lave, 1993; Hager et al., 2012). Thirdly, the musicians also portrayed their experiences with scrutiny and criticism as contributing to a stronger ability to perform in challenging circumstances. In doing this, they cited the importance of acknowledging and responding to social critique of their performance (Johnsson & Hager, 2008). In acknowledging these different aspects of their experience within their developmental narratives, they presented a balance between good and bad experiences that they felt allowed them greater ability to maintain positive emotional states and to respond to challenging performance situations. These characteristics of positive developmental narratives stand in contrast to those that reconstituted the musicians' development in a more negative way.

Negative developmental narratives.

On some occasions, the musicians in this study presented explanations of their development in a negative light, that is, describing a perception of decreased ability to perform or a pessimistic outlook for sustaining their working practices. The three issues in

orchestral performance described in the previous section are explored here as they relate to negative developmental narratives. These include (a) the impact of stress, injury, or anxiety; (b) the difficulties of becoming a member of the community; and (c) negative experiences of criticism and scrutiny.

Injury, stress, and anxiety.

One of the main themes arising from negative reconstitutions of orchestral musicians' developmental narratives is doubts about their ability to sustain their current working activity, whether related to injury, stress, or anxiety. In some cases, this doubt appeared related to motivation, as in the following interview extract:

Bridget: It frustrates me when I don't play as well as I know that I can. Definitely quitting I don't think is an option. I think I'd have to have a really good reason, like a really bad injury or something to quit.

In this interview extract, Bridget is speculating, in a distanced manner, about her future interest and ability to remain in her job, and she connects negative outcomes to the possibility of extreme injury. Physiological injury in the orchestral workforce is known to be widespread (Ackermann et al., 2012; Fishbein et al., 1988) and can insidiously disrupt and degrade the quality of musicians' experience of their work (Guptill, 2011). Furthermore, musicians often avoid admitting to being injured for fear of the social and professional isolation that can be encountered by those who do, which can lead to worsening conditions (D. Bennett, 2008; Rickert et al., 2013, 2014a, 2014b). Psychological health problems, such as stress and anxiety, are argued to affect the orchestral population in the same way (Holst et al., 2012; Kenny & Ackermann, 2013). These considerations may make musicians' speculations about their potential injury risks a lot closer to reality than they appear to wish to portray.

Fiona: A lot of people are injured, and I've never been what you would call injured, but sometimes after a big week I'll be like "well, I shouldn't practise because then I might get injured".

As Fiona, a cor anglais player, indicates in this extract, her concern about injury may also affect immediate choices about performance practices, and the literature on injury provides copious examples of how injury directly affects musicians' performing abilities (Ackermann et al., 2014). It appears that while it is important for musicians not to underestimate the significance of injury and stress (Araújo et al., 2017; Steptoe, 1989), musicians' concerns about their ability to sustain their working activities, as observed in these examples, may

influence their choices in how to engage in orchestral work and affect their ongoing ability to perform (Dobson, 2010a; Guptill, 2011; Rickert et al., 2013, 2014a, 2014b).

Distress and boredom were also factors that appeared to affect individual orchestral musicians' perceptions of the sustainability of their work.

Participant: I'd like to travel a bit and do a little bit of playing elsewhere, just for a bit, to kind of at least broaden the musical horizons, because you're really, playing with the same group of people, you do start to play the same ... If I think too deeply about it I'll want to do something else, because I'll think "Oh there's not much point", you know, people come in, they play music.

In this interview extract, this participant is voicing a concern that his current work may not be sufficient to maintain his interest in playing or to keep his performance skills as diverse as he expects they should be. His concerns for being able to sustain his interest in performance appear to align with two kinds of work-related boredom identified by Parasuraman and Purohit (2000): the boredom of high-level skills being underutilised in a rank-and-file position, and boredom or disaffection with the repertoire and lack of diversity in the work he is required to perform (D. Bennett, 2008).

Participant: I started to get weird aches and pains that were diagnosed as just because I was sitting funny because I was nervous. My left leg went completely haywire, and the physio said it was because I was actually sitting up off it in my efforts to sort of lean towards the section and be "really good".

The participant in this interview extract presents experiences of distress and injury that can affect his ability to perform. Stress, injury, and anxiety are known to correlate negatively with flow in orchestral performance (Cohen & Bodner, 2018; Csikszentmihalyi & Csikszentmihalyi, 1992), and so it is not surprising that experiences of distress and boredom, in the context of finding performance difficult, could lead to negative reconstitutions of developmental narratives. For the musicians in this study, this appeared to extend to their current estimation of their ability to perform and their predictions about their ability to engage in future performance activity.

Inhibiting social inclusion and trust.

Other characteristics of negative developmental narratives included the musicians' uncertainty about the legitimacy of their inclusion in the orchestra and negative feelings towards their probable career path. The difficulties that can arise for orchestral musicians from rigid musical and social hierarchies in orchestras, low likelihood of promotion, and high

public expectations for performance have been long established (Faulkner, 1973a, 1973b). Feelings of despondency or cynicism were apparent in connection to these difficulties when viewed within a negative developmental narrative. One characteristic understanding expressed by the musicians in this situation was related to uncertainty about the extent of their inclusion in the membership of the orchestra.

Participant: I was actually quite embarrassed after the second audition and towards the third, there was a very strong feeling of “if I don’t get this, then people are just going to think I’m an idiot”. And when I came back for the third contract, people were like “oh, you’re back again, ha ha”.... Your confidence I think naturally, over the course of a career, gets beaten down, so I was never going to be how I was in the first one.

In this participant’s evaluation of her career trajectory, she questions whether she belongs to the orchestra as legitimately as do perhaps some of her colleagues. This appears to be related to an estimation that her level of performance has declined and is not as valuable to the orchestra as it should be. D. Bennett (2008) documented similar connections between classical musicians’ subjectivities and their ability to maintain high performance standards or perform effectively with colleagues. Developmental narratives presented through perspectives of declining performance standards appear to accord with Bennett’s case that a perceived decline in performance can subsequently affect motivation, perceptions of inclusion, or psychological well-being.

A perceived decline in the value of participation was also expressed in connection to the motivation to maintain an orchestral position, as in the following extract:

Participant: If I think too deeply about it, I’ll want to do something else, because I’ll think “Oh there’s not much point”, you know, people come in, they play music ... it’s like a performance museum.... At the end of the day, you can do many things [as well], and I still kind of believe that that’s just to keep me feeling like I’m not trapped in the orchestra.

Besides the lack of motivation displayed in this interview extract, this participant also appears to be distancing himself from the high value that can commonly be placed on orchestral performance by the public as well as the high value placed by many musicians on holding on to a position in the orchestra (Coulson, 2010). Outcomes, such as the lack of motivation or decline in perceived value illustrated here, are not preordained, as demonstrated by the ability of the participants to reconstitute similar experiences within positive development. This suggests a nonlinearity similar to that experienced in

microgenetic changes to performance knowledge, in that the developmental outcomes appear to be relationally dependent on how the musicians encounter these experiences and what attitudes and values they bring to their activity (Billett, 2006). It appears from examples such as these that the musicians could perceive their development as strongly connected to their nonlinear experiences of inclusion amongst their colleagues and feeling of membership within the orchestra.

Difficulties with social scrutiny and critique.

The third characteristic of orchestral work that influenced positive and negative developmental narratives, surveillance and criticism from colleagues was associated with stress and performance anxiety. The participants frequently made a link between external criticism and internal criticism:

Allan: We get told nine good things about our playing and we get told one bad thing about our playing and then our focus becomes that one bad thing, becomes 100% of who we are.

As illustrated in this interview extract, participants often relayed experiences in which critiques made by their colleagues were internalised to become part of their own inner dialogue in a way that could contribute to negative perceptions of their performance. This was reported to be felt acutely throughout the trial period. Despite many of the musicians reporting that they felt able to relax post-trial, negative developmental narratives still often included similar feelings of being evaluated along with its associated stress, as expressed in this interview extract with the percussionist, Evan:

Evan: You can't just [say] "I've got the gig; I'm just going to plateau". It doesn't work, because people are always listening, always assessing you, it doesn't matter what [part] you play.

Although music performance anxiety is often associated with performance-inhibiting factors such as injury and interpersonal conflict (Kenny, Driscoll, & Ackermann, 2016), the musicians in this study often connected the stresses associated with surveillance and criticism with negative evaluations of their own performance ability, as in the following interview extract:

Participant: I was kind of happy when we did a program where I couldn't be heard.... I was very under-confident with my playing ... and then people were putting things in my ear about "you've got to play out and be really expressive".

Recognising and accepting social critiques are known to be part of gradual inclusion within a musical community (Brinner, 1995; Cottrell, 2004). However, through their effects on the participants' perceived performance ability, these examples demonstrate occasions on which social critique almost creates the opposite effect. In the context of a negative developmental narrative, incidents in which the musicians experienced this kind of stress, combined with a feeling of inability to enact performance knowledge in the moment, became part of a longer story of diminished performance ability. It is suggested here that the stress associated with surveillance by colleagues may repeatedly impact these musicians' enactment of performance knowledge and contribute to more negative perceptions of their own performance ability.

Particularly in negative developmental narratives, the associations between criticism from colleagues and issues with performance ability appeared to create complications with trust relationships amongst colleagues. During trial periods, musicians are assessed and ultimately awarded their positions based on the evaluations of colleagues with whom they work closely over several months. Although friendly relationships may develop or exist prior to this period, this can conflict with the critical evaluations those colleagues deliver through official or unofficial means, or even with unexpressed evaluations guessed at by the musicians on trial.

Participant: Every time your principal turns to you and says, "you've been a bit sharp all day today", you sort of go [gulps, grimaces] a little bit more.... Everyone was really supportive the whole way, but still your head's got voices in it the whole time.... With the second [trial panel] meeting, started to get some negative feedback, and that really threw me ... but it really helped that all my friends had been through that same experience.

The musician in this interview extract indicated that she valued the supportive interactions with the colleagues she worked with but still felt constrained by the fact that they were engaged in critical surveillance of her performance. The conflict between being supportive or collegial and being critical also appeared to be felt by those making evaluations as well, as indicated in this interview extract with Deborah, a principal viola:

Deborah: [As a principal], it's like I'm the boss and everybody here just listens, right? Sure [sarcastically]. I think half of the time I am talking to my desk partner it's like "oh let's do this way and that" but the other half is asking him what his opinion is. Especially because I'm pretty new to this orchestra, so I don't know about people's capability, or what kind of style they are used to.

It was elaborated in Chapter 5 that trust, referring here to feelings of support and goodwill between individuals (Khodyakov, 2007), is important to musicians' ability to perform together. It is curious that stress related to trials does not appear to be explicitly stated in the literature on orchestral performance, considering the extensive lists of stressors compiled in relation to orchestral work (Halleland et al., 2009; Holst et al., 2012; Middlestadt & Fishbein, 1988; Piperek, 1981b). This may be because musicians who have passed trials no longer want to associate themselves with those experiences of stress or its effect on their performance. Furthermore, it is likely that musicians who did not pass their trial, possibly experiencing large amounts of stress, are no longer part of the orchestral population. When auditions and trial periods require musicians to evaluate colleagues' performances, it would appear that difficulties in trust relationships between colleagues can influence musicians' negative perceptions of their development.

Through the findings discussed here, it is advanced that the negative developmental narratives expressed by the musicians in this study may affect their ongoing ability to perform. This is held to come about through the influences of negative developmental narratives on the musicians' attitudes to work and perceptions about the sustainability of their activity. It is also suggested that experiences of stress are related to performance anxiety and trust issues with colleagues (Kenny, 2011). Firstly, injury, distress, and boredom were interrelated with the musicians' evaluations of their performance ability, motivation, and the perceived sustainability of their future performance. Secondly, the negative attitudes and feelings that could arise from these factors also appeared to influence the value the musicians placed on their role and their contribution to the orchestra or the overall value of the orchestra's activities. Thirdly, the stress arising from surveillance and criticism by colleagues is also interrelated with musicians' self-evaluations, influencing performance through its complicating effect on feelings of trust and support. These complications and stresses were common to most of the participants' experiences during their trials, but it is suggested here that this continues to affect relationships beyond the completion of the trial. It appears this is because they affected the musicians' choices about how they engage in the orchestra's activities, their perceptions of their well-being and the sustainability of their performance work, and, ultimately, their ability to engage in performance with their colleagues. The musicians' encounters with positive and negative experiences and perceptions of development appear to parallel the nonlinearity discussed in relation to microgenetic learning. That is, the developmental outcomes of those experiences appear to be relationally

interdependent with the intentionalities and personal understandings musicians bring to how they engage with those experiences (Billett, 2006).

Summary of ontogenetic development processes.

To summarise this section on orchestral musicians' ontogenetic development, the study participants identified isolated past musical and social events from their personal-historical experience. They connected them with current experiences to indicate changes in their playing, attitudes, and approaches to performance. Their current experiences of their working environments appeared to influence the developmental narrative they presented. For example, the same participant could describe positive narratives during "good" weeks and negative narratives in the midst of more challenging situations. In positive developmental narratives, the musicians acknowledged the difficulties they had encountered, such as stress, criticism, and acceptance by colleagues, and presented these as contributing to a strengthened ability to perform as a member of the orchestra. In negative developmental narratives, these same issues were presented by the musicians within an account of diminishing ability to cope with difficulties and to perform effectively with their colleagues. The optimistic perspectives of their ability to perform expressed by the musicians in the positive developmental narratives are held to hold encouraging indications for their future well-being and ability to maintain effective performance practices (Araújo et al., 2017; Rickert et al., 2014a). Conversely, the pessimistic outlooks espoused within negative developmental narratives may affect the musicians' perceptions of their well-being or career sustainability. This may subsequently influence the choices they make about their continued performance activities or about seeking appropriate clinical intervention. Thus, it is advanced here that the musicians' positive and negative experiences of their past and present situations may affect their ontogenetic development through influencing their perspectives on their ability to perform into the future.

Professional Orchestral Musicians' Microgenetic Learning and Ontogenetic Development

This chapter presents illustrations and explanations of the microgenetic learning and ontogenetic development processes apparent in a sample of professional orchestral musicians. Within the relatively short time span of the seconds immediately preceding and following the performance of a single passage of music, the musicians in this study were observed to make microgenetic changes to their performance knowledge through how they engage in their work together. Specifically, through enacting the processes of rehearsal (i.e., awareness,

communication, evaluation, and the formation of playing intentions, as elaborated in Chapter 5), changes occurred in the musicians' understandings of how to play the passage. These processes are advanced here as constituting moment-to-moment changes in their performance knowledge that could be carried forward to the next performance occasion; in other words, these processes enabled instances of microgenetic learning (Wertsch, 1985). Over the course of a week's rehearsal and performance schedule, those instances of microgenetic learning were observed to occur in a pattern that was nonlinear but nevertheless directional. It was observed that this development occurred through both inter- and intra-psychological efforts (Wertsch & Tulviste, 1992), in that the repetitive collective action allowed individual musicians to adjust their performance and allowed the orchestra as a whole to find an agreed way of playing together.

In addition to these temporal aspects of learning, awareness of space and place was observed to be an important influence on how the musicians evaluated and changed their performance knowledge. Spatial information was embedded among the musicians' knowledge and evaluations of the people and performances around them and their understandings of these spatial aspects changed as they negotiated their meanings and values, connecting their cultural knowledge with their multisensory engagement with their environment (Pink, 2008). It is advanced here that these changes in the spatial aspect of performance knowledge frequently occurred on a moment-to-moment basis, that is, they are instances of microgenetic learning that are influenced by the musicians' multisensory engagement with and construal of their environment. Through their continual reconstitution of performance around physical spaces with changing levels of importance, it is proposed that the musicians' performance knowledge is emplaced through their engagement with their environment. Emplacement (Fors et al., 2013; Pink, 2011) is advanced here as a term that encapsulates the relationship between musicians' changing performance knowledge and their changing physical and social environments.

Taken together, these temporal and spatial aspects of learning are proposed to underpin the musicians' continual co-creation of their performance environment. Within this study, their ongoing emplacement of their performance knowledge appeared to depend on their perception of their physical environment and how they enacted their intentionalities within it (Gibson, 1986). As the musicians reacted and made adjustments to each other across repeated short instances of performance, they contributed to the continual development of their collective performance. It is advanced that this constitutes a process of co-creating a

shared performance environment, in which individuals' microgenetic changes in performance contribute to a collective development in how the orchestra performs together.

The connections between these instances of microgenetic learning and ontogenetic, long-term development are apparent in how the musicians selected isolated experiences of musical performances or social interactions and presented them within an explanation of how they arrived at their current knowledge of performance. It appears likely that a relationship between the musicians' developmental narrative and their current situations arises from engaging in a process of connecting past and present experiences to explain changes in their playing, attitudes, or approaches to performance (Gergen, 2009). Positive developmental narratives presented by the participants often acknowledged both positive and negative experiences as part of the explanations of their performance history. Negative developmental narratives often portrayed the musicians' experiences of stress, injury, anxiety, difficulties with feeling included in the orchestra, and difficulties in dealing with criticism from colleagues as contributing to a diminished ability to cope with challenging performance situations. Through the findings and literature discussed in this chapter, it is advanced that negative developmental narratives may affect musicians' future well-being and the longevity of their careers. This is because negative perceptions of performance ability and career sustainability are understood to have negative influences on the likelihood of musicians to engage in effective coping strategies or to seek timely clinical intervention for stress, injury, or anxiety (Dobson, 2010a; Kenny & Ackermann, 2013; Rickert et al., 2014a, 2014b).

This chapter has presented the findings of the investigation relating to professional orchestral musicians' learning and development. The literature discussed in Chapter 2 identified well-being and career sustainability as key concerns for orchestral musicians, orchestral organisations, and the tertiary institutions involved in education for orchestral music work. In Chapter 3, it was proposed that these concerns could be further understood by examining orchestral musicians' intersubjectivity as it arises from how they engage together in and learn through their work. While Chapter 5 presented findings about how musicians engaged in orchestral work and how intersubjectivity formed a part of their processes of rehearsal, this chapter has discussed the findings related to musicians' learning and development within the context of their engagement in orchestral work. This investigation found that there were important temporal and spatial aspects to the microgenetic, or short-term, changes to the participants' performance knowledge, and that these were related to the musicians' ongoing cocreation of their performance environment. It also found that the musicians could hold positive or negative perceptions of their ontogenetic, or long-term,

development and proposed that how they engage with these developmental narratives may influence their well-being and ongoing ability to sustain their engagement in orchestral work. The following chapter outlines the original contributions to knowledge made by this investigation and elaborates suggestions for future practices and research within the orchestral music industry.

Chapter 7: Implications for Orchestral Musicians' Continued Ability to Perform Effectively

This chapter presents a precis of the findings and implications of the investigation into learning in professional orchestral performance and proposes the contributions to knowledge advanced within this dissertation. As foreshadowed in Chapter 2, well-being and career sustainability are identified as current concerns for professional orchestral musicians. To this end, Chapter 2 explained the importance of understanding the connection and integration of personal and social aspects of engaging in orchestral work (Ascenso et al., 2017; D. Bennett, 2008; Gaunt & Dobson, 2014; Reid et al., 2016). The conceptual framework for understanding engagement in orchestral work, outlined in Chapter 3, suggested that an appropriate way of addressing these concerns is through gaining a deeper understanding of how intersubjectivity – shared understandings - arises as orchestral musicians engage together in and learn through their work (Billett et al., 2006; Hager & Johnsson, 2009; Rogoff, 1990; Valsiner, 2000; Wertsch, 1985). Chapter 4 presented and justified the use of sensory ethnographic methodology (Pink, 2015) as the means of investigating these phenomena. Chapter 5 described and explained how a sample of professional orchestral musicians from an Australian symphony orchestra engaged in their work. It also illuminated how intersubjectivity occurred in this context. Patterns of change in the musicians' performance knowledge, attitudes, approaches to performance, and perceptions of their ability to perform effectively within the orchestra were described in Chapter 6 to elaborate how learning and developmental processes occurred through their coparticipation in orchestral work.

Dissertation Overview

Understanding orchestral musicians' learning and development remains important as it concerns the well-being of future, current, and former musicians and their ability to sustain effective working activities. It can also inform future orchestral performers and their educators about current practices and potential experiences of future work. The primary problem identified in this investigation is that learning and development are an integral part of how orchestral musicians engage in their work (Gaunt & Dobson, 2014; Johnsson & Hager, 2008; Rink et al., 2017). However, there are aspects of orchestral working situations that can inhibit this learning, creating difficulties for musicians and orchestras (D. Bennett, 2008; Gembris, 2006; Gembris & Heye, 2014; Manturzewska, 1990). To comprehend these

social and environmental aspects, a concept of learning and development in this context must include the musicians' constitution and reconstitution of their shared participation (Billett, 2002b; Rogoff, 1990). Such an account also needs to be able to illustrate the connections between sociocultural development and intersubjectivity (Valsiner, 2000; Valsiner & Van de Veer, 2000; Vygotsky, 1978; Wertsch, 1994). The investigation identified five processes of rehearsal that supported the participant musicians' contributions to the interpersonal shaping of the orchestra's performance. Through these processes of rehearsal, they negotiated and co-constituted orchestral practices, knowledge, and values. Goodwill trust, or individuals' reliance on others' good intentions and support (Khodyakov, 2007), was one aspect of intersubjectivity identified as important to the musicians' ability to perform effectively. As they engaged in the processes of rehearsal together, the musicians' microgenetic learning processes were found to occur within their immediate temporal and spatial influences on their experiences and in how they reconstituted their performance knowledge. An example of this is the emplacement (Fors et al., 2013; Pink, 2011) of performance knowledge around their individually constituted spatial awareness of the orchestra. Furthermore, the changing reconstitutions of their abilities, attitudes, and approaches to performance are advanced as factors that may influence their ontogenetic development through their perceptions of their ongoing ability to sustain performance activities. These findings, including the descriptions and explanations of how orchestral musicians engage in and learn through their work, provide a basis for discussing their ongoing well-being and career sustainability.

Overall, the findings of this investigation suggest that orchestral musicians' development is highly contingent on unique person- and situation-dependent factors. In turn, this may contribute to individuals' perceptions of an increased ability to perform well or a decreased ability to perform effectively with their colleagues. On one hand, negative experiences in orchestral work, such as injury, anxiety, and high levels of stress, present ongoing hindrances to effective performance. These outcomes should not be overlooked or underplayed in consideration of how they can affect musicians' present and future ability to perform. On the other hand, undue focus on orchestral musicians' negative experiences may overshadow the fact that they can be contingent on individuals' immediate experiences and can often be balanced against positive experiences of engagement in work. Ultimately, those experiences contribute to developmental outcomes in ways that are dependent on the musicians' nonlinear engagement with their work.

A summary of the findings is presented now, outlining how intersubjectivity and engagement were found to co-occur in orchestral performance and in the observed patterns of

microgenetic (i.e., short-term or moment-by-moment) learning and ontogenetic (i.e., long-term) development (Wertsch, 1985). This is followed by an account of the original contributions to knowledge advanced within this dissertation. The contributions comprise (a) the development of appropriate methodologies and procedures for investigating music performance, (b) new descriptions and evidence regarding musicians' engagement in orchestral culture, and (c) conceptualisations of their sociocultural development. Finally, the implications for future practice and research are discussed, elaborating the complexity of the connections between orchestral musicians' positive and negative experiences and their ability to sustain their working activity into the future.

Findings Overview

To outline the first part of the findings, five processes of rehearsal were identified in this study, comprising (a) awareness, (b) communication, (c) evaluation of performance, (d) acting like a professional orchestral musician, and (e) the formation of playing intentions. These processes supported the musicians' individual and collective playing activities, ultimately contributing to how the musicians changed their shared practices in the short term towards negotiated improvements in the orchestra's performance, otherwise known by the colloquial term rehearsal. Awareness, firstly, is regarded here as musicians' perception and consciousness of what is happening around them and within their own physical and sociopsychological activity. The musicians appeared to engage in kinds of awareness that could be open and receptive to a wide range of information, focused toward smaller elements of their activity or environment, or arising within movement and activity, as in entrainment (i.e., the precise coordination of movement and sounds: cf Phillips-Silver et al., 2010). Secondly, communication is the interactions among musicians that involve sending, receiving, and interpreting information. It was found to be a process employed for collective action in which performance ideas could be conveyed, contested, and negotiated amongst orchestral colleagues, both vocally and non-vocally. Evaluation of performance, thirdly, is a continuous process of appraising and making judgements about performance. It was found to have an important impact on how performance was negotiated and how musicians maintained trust amongst colleagues. This included the use of humour as an important way of moderating the difficulties of communicating about evaluations of performance. Fourth, acting like a professional orchestral musician was found to be an aspect of performance that refers to how the musicians understood and enacted appropriate behaviours and how they influenced others in their workplace. Finally, playing intentions are effortful audiations (i.e., mental creations

of sound; Gordon, 2009; Trusheim, 1991) for use in immediate or future performance. They were found to be constantly formed and reformed by the musicians to incorporate their ongoing awareness and anticipation of the orchestra's performance. Arising within both individuals' multisensory awareness and the orchestra's collective adaptations of performance practice, the formation of playing intentions enabled the musicians to collaboratively develop their practices towards an agreed way of performing together. Together, the musicians' engagement in these processes allowed intersubjective understandings of orchestral performance to develop, and this development is elaborated in the second part of the findings.

Learning and development.

The changes to the musicians' performance knowledge that arose through their engagement in the processes of rehearsal are regarded as instances of microgenetic learning; that is, the moment-to-moment processes of change in understanding and practice that arise from individuals' participation in and meaning-making around an activity (Billett, 2015; Rogoff, 2003; Valsiner & Van de Veer, 2000; Wertsch, 1985). These microgenetic changes were observed to take place in the seconds surrounding discrete instances of performance, changing performance knowledge across the moments immediately before, during, and after playing. They also occurred over the course of week-long schedules of rehearsals and performance, occurring in a fragmented and non-linear, but still directional, manner. In addition to these temporal aspects of learning, spatial aspects were found to be highly important to how the musicians constituted their performance knowledge. Spatial awareness and experience of distance, position, and motion were central to the musicians' discussions about performance. This aspect of performance knowledge was interrelated with socioculturally constituted knowledge of who was playing and the relative importance or reliability of their contributions. Through these evaluations of their spatial awareness and cultural knowledge, the musicians appeared to be continually constituting and reconstituting a changing spatial awareness of the orchestra as they performed, through which their performance knowledge was emplaced (Fors et al., 2013; Pink, 2011). It is proposed that, as they engaged together with these spatial and temporal aspects of their work, the musicians co-created a performance environment, collectively influencing the microgenetic changes in their performance knowledge. The instances of microgenetic learning described here form part of the musicians' explanations of their long-term development.

The musicians' self-described changes to their abilities, attitudes, and approaches to performance are regarded as indicators of their ontogenetic development, that is, the lifelong changes in individuals' knowledge and abilities that guide their interactions with daily life (Wertsch, 1985). The study participants presented recalled instances of microgenetic learning within their explanations of their development over the course of their careers, consistent with sociocultural perspectives on the interrelationship between learning and development (Vygotsky, 1997; Wertsch & Tulviste, 1992). The developmental narratives presented by the musicians could be constituted in a positive or negative way, and this often coincided with positive or negative appraisals of their current working environments. In positive developmental narratives, negative experiences were viewed as balanced against positive ones or in some way as contributing to an increased ability to meet the challenges of orchestral performance. In negative developmental narratives, those experiences were viewed as injurious to the musicians' ability to perform effectively with colleagues or to carry on their work in the future. Whether they were construed positively or negatively, these negative experiences included encounters with stress, anxiety, injury, difficulties with feeling accepted within their orchestral community, and surveillance and criticism by colleagues. Musicians' perspectives about their ability to perform effectively are held to have an impact on their choices about continued participation in working activities and likelihood of seeking timely clinical intervention for stress, injury, or anxiety (Ascenso et al., 2017; Kenny & Ackermann, 2013; Rickert et al., 2014a). Thus, it is advanced that the study participants' engagement with both positive and negative views on their long-term performance ability may affect their ontogenetic development through these effects on their well-being and ability to sustain working practices.

Implications for well-being and career sustainability.

Overall, the findings on orchestral musicians' intersubjectivity and engagement in their work have addressed concerns about their well-being and career sustainability in the following ways. Goodwill trust, or the confidence individuals have in others' good intentions (Khodyakov, 2007), emerged as a crucial theme that connects musicians' well-being with the intersubjective processes of evaluating others' performance. The musicians in this study found it important to establish goodwill and support amongst their colleagues, as this assisted with communicating about evaluations to affect collective changes in practice. Some of the ways in which musicians are held to understand and fulfil their role in an orchestra include maintaining their ability to perform at their best and taking creative risks (Cottrell, 2017;

Gembris & Heye, 2014; Gilling, 2014). The musicians reported their abilities in these areas to be increased in situations with high levels of trust and decreased in situations where more difficult trust relationships existed. This is illustrated in the following interview extract, as a participant indicates their satisfaction with the positive feedback, trust in colleagues' intentions, positive feelings about performance, and positive emotional state:

Bridget: I went through my trial and everything, it was fine and so you're like "oh ok, I am good." It kind of gives you verification that yes, you are a good section player, and yes, you can play the violin. And so, when you know that, then you can relax.

Communications with colleagues about evaluations could also become internal criticisms (Kingsbury, 1988), affecting the musicians' feelings of membership within the orchestra or beliefs about their abilities, as in the following example:

Allan: We get told nine good things about our playing and we get told one bad thing about our playing and then our focus becomes that one bad thing, becomes 100% of who we are.

Musicians' experiences of injury, stress, and anxiety are also held to influence goodwill trust with colleagues and to create situations that can potentially inhibit them from seeking timely clinical intervention through embarrassment or anxiety about possible ramifications (Ascenso et al., 2017; Kenny & Ackermann, 2013; Rickert et al., 2014a). These aspects of psychological and physical well-being are influenced largely through the development of trust amongst orchestral colleagues.

Orchestral musicians' physical and psychological well-being and career sustainability may be affected similarly by their perspectives on their own development, potentially influencing their choices about continued participation in the workforce or attitudes towards mental or physical health (D. Bennett, 2008; Dobson, 2010a). Musicians' perceptions of decline in their ability to perform effectively, whether through injury, anxiety, or reduced trust with colleagues, may result in an experience of reduced trust in their ability to perform, as illustrated in the following extract:

Participant: I was actually quite embarrassed after the second audition and towards the third, there was a very strong feeling of "if I don't get this, then people are just going to think I'm an idiot". And when I came back for the third contract, people were like "oh, you're back again, ha ha".... Your confidence I think naturally, over the course of a career, gets beaten down, so I was never going to be how I was in the first one.

Classical musicians' perceptions of a compromised ability to perform have been connected with increased negative emotional states and feelings of decreased membership in the ensemble or larger music community (D. Bennett, 2008). It appears from the findings here that musicians' perception of their development or the value of their contribution comes about in part through the contribution of social critique and the gradual negotiation of procedural knowledge, attitudes, and expectations. For example, a musician who experiences a decline in the perceived value of their contribution within their section (Murnighan & Conlon, 1991) may experience a decline in motivation to maintain their position within the orchestra, as illustrated by the following statement:

Participant: If I think too deeply about it, I'll want to do something else, because I'll think "Oh there's not much point", you know, people come in, they play music ... it's like a performance museum.... At the end of the day, you can do many things [as well], and I still kind of believe that that's just to keep me feeling like I'm not trapped in the orchestra.

Thus, as musicians engage in both positive and negative developmental narratives, this has the potential to affect their perspectives on their abilities, attitudes, and approaches to performance. It is advanced that this may affect their career sustainability through their ongoing choices about future participation in working activities.

Through providing further evidence of these connections between collective activity in orchestras and musicians' well-being and career sustainability, this dissertation has provided original contributions to the literature on orchestral performance, and these points are elaborated in the next section.

Contributions to Knowledge

In preview, methodological developments elaborated within this dissertation are proposed here to be significant original contributions to knowledge, as are new findings and evidence concerning musicians' engagement and learning in orchestral practices. Firstly, the application of sensory ethnographic methods (Pink, 2015) and the development of situated immediate recall interview procedures represent methodological advances in the study of music performance. Secondly, new understandings and evidence concerning musicians' engagement in orchestral culture are proposed. This includes details of the roles of trust and humour in orchestral work, as well as the concept of playing intentions, or mental creations of sound, and how they are used to predict and enact coordinated performance with other musicians. Thirdly, orchestral musicians' learning and development, as they arise through

engagement in their work together, are described here within the conceptual framework of sociocultural development (Rogoff, 2003; Valsiner & Rosa, 2007a; Wertsch, 1985).

Contributions to knowledge in the field of musical performance and development include descriptions of the nonlinear learning processes within the musicians' engagement, the emplacement of orchestral performance knowledge around spatial awareness (Fors et al., 2013; Pink, 2011), and how musicians co-create their performance environment. Further contributions include the descriptions of orchestral musicians' positive and negative developmental narratives, how those narratives may contribute to their ongoing well-being and career sustainability, and the nonlinear way musicians engage with them.

Methodological advancements.

The use of sensory ethnographic methods and procedures permitted this investigation to yield rich information about the interconnected physical, psychological, and sociocultural aspects of music performance. Methodologies that reach multiple contexts of experience have become important as music performance research has increasingly included qualitative approaches and cross-disciplinary focuses (Hargreaves & North, 1997; North & Hargreaves, 2008; Parncutt & McPherson, 2002). Sensory ethnography takes account of individuals' personal-historical and immediate perceptual experiences, as well as their procedural and cultural knowledges and practices as they are constituted through their interconnected bodily senses (Pink, 2015). Thus, it is a method that is capable of comprehending and generating descriptions of musicians' embodied and procedural knowledges (Dobson & Gaunt, 2013; Hager & Johnsson, 2009). This is germane to investigating how musicians play their instruments, interact with others, and perceive and act within their environment. Furthermore, it provides avenues for researchers to engage with multiple aspects of the sensory environment by eliciting descriptions of how it can be experienced, an important consideration for accessing emic understandings of sound and movement in performance. The sensorially focused approach to comprehending the data and findings in this study further recommends the use of similar methodologies to be adapted to music performance research.

The situated immediate recall interview was a procedure developed specifically for this study to generate sensorially rich data and vivid descriptions from interactions with musicians within their performing environment. Responding to an epistemology that regards musicians' performance knowledge as situated and embodied (Lave & Wenger, 1991), constituted within sociocultural contexts (Valsiner & Van de Veer, 2000), and sensorially

accessible to the researcher (Pink, 2015), the interviews directed discussions around concrete and recalled instances of performance. Occurring in the musicians' chairs immediately following a rehearsal or performance, the interviews made use of stimulated recall techniques to generate descriptions closely tied in place and time to the context of the knowledge being investigated (Fetterman, 1989; Kvale & Brinkmann, 2007; Wengraf, 2001). Close observations of participants' responses and re-enactments of experiences and actions, my own engagement with the immediate surroundings, and video-recording for later analysis resulted in a rich source of data on musicians' intersubjective and multisensory engagement with their orchestral environment. It is advanced here that the development of this procedure is an original contribution to research techniques that may be useful to future investigation of musicians' procedural knowledge and interactions with their environment.

Understanding engagement in orchestral culture: What musicians do.

This dissertation has elaborated details of musicians' engagement in orchestral culture that represent new contributions to understandings of how they participate together in performance. Understanding the cultural and procedural details of what musicians do is considered important both for informing educational practices (Ericsson et al., 2018; Gaunt & Dobson, 2014; Rink et al., 2017; Williamon, 2004) and for comprehending their well-being and career sustainability (Ascenso et al., 2017; D. Bennett, 2008; Brodsky, 2011). The findings presented in this dissertation describe and explain the participant musicians' engagement in orchestral practices through a focus on the intersubjectivity that arose through their coparticipation, that is, the interaction between individuals' agency and the affordances in their physical and social environments (Billett, 2002b; Valsiner & Van de Veer, 2000). This advances an understanding of musical practice that comprehends its interrelated social, cultural, psychological, and physical aspects, reflecting how it is enacted in complex, real-world contexts (Robson, 2011). New conceptualisations and evidence are elaborated here for two aspects of orchestral performance. These are, firstly, the role of trust and humour in relationships amongst colleagues and, secondly, the process of forming and reforming playing intentions as a way of engaging in rehearsal and performance.

Trust, or individuals' reliance on another's competence or goodwill (Khodyakov, 2007; ten Cate, 2013), is described in this dissertation with new evidence that confirms and elaborates how it is related to orchestral musicians' negotiations of performance practices, well-being, and social and musical hierarchies. Humour, jokes, and laughing were found to play an important role in moderating the difficulties of discussing evaluations about

performance and maintaining trust amongst colleagues. The necessity of communicating with other musicians about evaluations of performance was found to create complications in working and personal relationships, influencing musicians' ability to perform together effectively (D. Bennett, 2008). In these circumstances, perceived support, rather than truthfulness, was found to be most valued in maintaining effective working relationships. However, the value of demonstrating support had to be balanced against the advantages and disadvantages of communicating truthfully about evaluations, particularly in negotiating power hierarchies or where there was likely to be a high sensitivity to criticism. Humour was found to be an effective tool in avoiding or minimising conflict in this kind of communication, in addition to its role of intersubjectively negotiating values and attitudes (Cottrell, 2004). It was found to be often used to simultaneously demonstrate goodwill while communicating about evaluations or potentially conflicting opinions. This account of how trust and humour were enacted in an orchestral environment provides new details of how musicians participate together in performance.

The concept of playing intentions is elaborated in this dissertation as a way of describing effortful audiations (i.e., mental creations of sound) that are used in the enactment of immediate or future performance. This is advanced as an original contribution to the music performance literature, bringing together the processes of audiation (Brodsky et al., 2008; Gordon, 2009) and anticipatory auditory imagery (Brodsky et al., 2003; Keller & Appel, 2010; Keller et al., 2010). It also illustrates how they form part of musicians' intentionalities and practice (Badino et al., 2014; Trusheim, 1991; Wing et al., 2014) and conceptualises both mental audiations and procedural knowledge as interrelated aspects of musicians' embodied cognitive processes (Wilson & Golonka, 2013). Furthermore, playing intentions are a key element of the social interactions of orchestral performance through the musicians' intersubjective negotiations of practice and performance ideas. Through this communication, each musician brings past experiences and contributes personal adaptations to the group's performance, allowing the collective activity to develop towards shared performance goals. Thus, the term playing intentions is advanced as a concept that describes their personal practices and intentionalities and how they interact with the orchestra's performance, incorporating psychological, physical, and social processes.

Understanding development in orchestral practice: How musicians learn.

Conceptualising professional orchestral performance within the framework of sociocultural development provides original contributions to knowledge through

demonstrating how musicians' thinking, acting, and learning are fundamentally connected through their collective practice (Rogoff, 2003; Valsiner & Rosa, 2007a; Wertsch, 1985). The music performance literature holds that understanding musicians' learning is important in comprehending their well-being and the sustainability of their practices (D. Bennett, 2008; Gaunt & Dobson, 2014; Lamont, 2011; Smart & Green, 2017; Williamon et al., 2017). The learning and development described in this dissertation explain the connections between concrete practices in orchestral performance and musicians' ongoing participation in orchestral work. Further, some aspects of orchestral musicians' learning described here illuminate general discussions about how learning and development occur through working activity.

The nonlinear patterns of learning and development in orchestral performance elaborated in this dissertation are significant to both musical and general discourses on workplace learning. Microgenetic learning, or moment-to-moment changes in performance knowledge, was observed to occur in a nonlinear pattern, occurring across multiple, fragmented experiences throughout a daily or weekly schedule of rehearsals and performances. Nonlinearity was also a feature of how musicians recalled and used memorable events in their personal history to explain their current perception of their long-term development. That is, individual participants were found to present different personal-historical events on different occasions or to use the same event to explain different developmental arcs, often contingent on their experience of their current working environments. For example, a trial period of employment in an orchestra could be regarded as a constructive experience in one week and a traumatic and injurious experience in another, depending on the individual musicians' appraisal of their current situation. The nonlinear patterns identified in this study echo the nonlinear trajectories recognised in other careers in the music and creative industries, arising from concurrent and overlapping projects, opportunities, setbacks, and personal goals (D. Bennett & Bridgstock, 2014; Bridgstock, 2011; Petocz et al., 2014; Teague & Smith, 2015). Recognising nonlinear learning patterns is also important to wider sociocultural discourses, as it highlights how learning and development can be highly contingent on the incidental nature of human experience. Such a conceptualisation of learning as occurring in fits and starts can contribute to discussions about how it interacts with individual and social intentionalities (Archer, 2000; Emirbayer & Mische, 1998; Fors et al., 2013; Lave, 2008).

Emplacement of orchestral performance knowledge is another finding elaborated in this dissertation that can contribute to wider discussions of musicians' procedural knowledge.

In this study, awareness of space and place was identified as important to how the musicians evaluated and changed their performance knowledge. Place, as an ethnographic concept, is held to be the constructed or co-constructed knowledge of an environment, construed through the meanings and uses that individuals experience within it (Feld & Basso, 1996; P. Hubbard & Kitchin, 2010; Ingold, 2011). Thus, emplacement (Fors et al., 2013; Pink, 2011) is advanced as a concept that describes how the musicians' performance knowledge was constituted and enacted around their individually and socially constructed knowledge of the orchestral environment. It is further suggested that emplacement is a useful concept for exploring the connections between musicians' performance knowledge and other experiences of spatial and social environments.

The co-creation of a performance environment is a concept advanced to describe how orchestral musicians' acting and learning unfold together, underpinned by their temporal and spatial engagement. This concept has particular relevance for ensemble performance, as it is a way of accounting for the adjusted understandings and refined practices made through coparticipation over time and amongst the spatial arrangements of the physical and social environment. It was illustrated through examples of performance where the continuous adjustment of performance knowledge was more obvious, such as changes being made to the performance venue or layout of the orchestra. However, it points to the constant refinements to activities that each musician makes within an environment that "acts back" and the gradual inclusion of multiple playing intentions into a mature co-constitution of the shared performance.

Finally, the descriptions of developmental narratives and their influence on the musicians' perceptions of their ongoing ability to participate in orchestral work are advanced as a significant contribution to knowledge about the orchestral industry. From the investigation carried out, a relationship is suggested between musicians' positive perceptions of their development and stronger appraisals of their ability to sustain orchestral work. A relationship is also suggested between negative perceptions of their development and diminished appraisals of their ability to sustain orchestral work. These findings have particular relevance to musicians' well-being and career sustainability but concerns about their impact on future ability to perform are based on an emergent field of research in this area (Ackermann et al., 2014; Araújo et al., 2017; Ascenso et al., 2017; Pecun et al., 2018; Rickert et al., 2014a). Predictions about future participation and maintaining sustainable practices based on these relationships are complicated further by the nonlinear way in which musicians engage with these perspectives on their development. Particularly as these findings

relate to key concerns within the classical music industry, it is an area in which further research is recommended.

Implications for Future Practice and Research

One of the key implications of the findings of this investigation is that, in future research or practice, balance is required in addressing orchestral musicians' positive and negative experiences. Diminished ability to perform effectively or to sustain working activities represents a genuine threat to individual musicians' careers and the performance of professional orchestras. This investigation has suggested that musicians' negative experiences and perceptions of development can be a contributing factor. However, individuals' experiences can have socioculturally complex influences on their development and performance, and negative effects on well-being or career sustainability are not a certain outcome of negative experiences. Rather, as the findings demonstrated, negative experiences could contribute to musicians' enhanced ability to cope with challenging situations and to build constructive relationships, both within and beyond their working environment.

In the interests of current and future orchestral musicians, institutions, and educators, it is important to recognise and understand the aspects of orchestral work in which there is the potential for harm to musicians' well-being and ongoing ability to continue working. In particular, trial periods in the employment arrangements of Australian symphony orchestras were found to be a source of experiences that could create complications in working relationships that inhibit immediate and future performance. It is worth noting that, as permanent members of the orchestra, all participants in this study had been successful in passing this trial period. Even within this "survivor" population, there were examples of harm and distress resulting from experiences in trial periods that provoke compassion and demand care in the future implementation of employment procedures. For this reason, recommendations for reforms such as the use of performance evaluation procedures or "artistic proficiency management" (Strong, 2005; Watson & Forrest, 2014) are best approached with caution, as these may value institutional well-being over and above personal or social well-being. Much of the literature on orchestral organisational practices shares the underpinning assumption that both personal and organisational effectiveness should be a key concern for orchestras (Bougon et al., 1977; Hackman, 2003; Mogelof & Rohrer, 2005). However, this assumption can contain a questionable conflation, as organisations and employees' intentionalities and interests pertaining to performance and development are not always aligned (Billett, 2010b). Thus, it is recommended that current recruitment and

employment procedures receive careful consideration to balance this potential for harm with orchestras' operational necessities.

On the other hand, it is important to acknowledge that not all negative experiences contribute to detrimental outcomes: it was also demonstrated that they could contribute to the development of musicians' ability to perform and to cope within the challenging circumstances they will inevitably encounter. A balanced perspective of positive and negative experiences was a characteristic of positive developmental narratives. This accords with the recommendations from the field of positive psychology, in which well-being and effective performance are held not to be solely dependent on the "absence of pathology" but as arising from personal and interpersonal processes that assist performance (Seligman, 2012; Seligman & Csikszentmihalyi, 2000). It appears, then, that the aim of research or practice reform should not be eliminating negative experiences but rather, the promotion of environments that can facilitate effective performance. Examples encountered within the investigation included situations in which the musicians had developed relationships with colleagues, from within and beyond the orchestra, with sufficient trust to share effective support and critique. The findings suggest that both negative and positive experiences form part of finding membership within an orchestra. This involves musicians' developing gradual and coproduced understandings and acceptance of who they are and how their practices form part of the orchestra's activities.

Recommendations for practice and research.

Two key areas are recommended for further research and development in orchestral practices. Firstly, further empirical study and theorisation is needed to provide a cohesive understanding of cognition that incorporates awareness of space, movement, and activity with musical performance. Through the findings about spatial awareness, emplacement was advanced as a useful way of conceptualising musicians' combined acting and thinking as they perform within particular social, musical, and physical environments. The term cognition is used here to refer to processes of mind and activity that comprehend those several aspects of sociocultural, embodied, and emplaced performance knowledge. Advances in understanding orchestral musicians' practices in this way is relevant to a wide array of endeavour in musical performance.

Secondly, studies conducted in orchestras with different employment conditions to Australian institutions would be beneficial, as there may be different political, financial, social, or musical considerations that create different conditions for development. This would

be particularly useful for creating more generalisable understandings of how musicians' development and career sustainability are connected in global orchestral contexts. In terms of addressing the specific challenges to musicians' development and activity, further research is required into appropriate and effective avenues of education, industry reforms, and provision of professional development and clinical services. For many years, "better education at all levels" had been the suggested remedy (Middlestadt & Fishbein, 1988; Piperek, 1981b; Sternbach, 1995), shifting much of the responsibility to educational institutions. Despite recent significant progress in tertiary music education that addresses musicians' lifelong work and learning (D. Bennett, 2016; Latukefu & Ginsborg, 2018; Lebler et al., 2014; Rink et al., 2017), studies such as this one indicate aspects of learning that are nonlinear and that are tied to particular experiences of social and musical environments (Gaunt & Dobson, 2014; Hager & Johnsson, 2009; Smart & Green, 2017; Williamon et al., 2017). Pecun et al. (2018) hold that focusing on specific skills to address specific concerns may not be effective for the difficulties faced by performers. Instead, they suggest that performance-specific assistance, in the form of speakers and self-help offerings, might be more effective and be taken up more readily by professional musicians, rather than clinical offerings that might unnecessarily medicalise their difficult experiences. As difficult as institutional change is within professional orchestras (Allmendinger & Hackman, 1999; Couch, 1983; Faulkner, 1973a; Radbourne, 2007; Wolf, 2017), it appears likely that the most effective changes to practice can be made in orchestral workplaces. The ongoing challenge here is developing changes to practice that are effective and acceptable to orchestral communities.

Concluding considerations.

Investigating micro and macro aspects of how professional orchestral musicians engage in and learn through their work has raised two significant considerations in comprehending musical performance. Firstly, orchestral musicians' learning is tied to the intentionalities and activities enacted in particular orchestral environments. Thus, it appears that concepts of skills, transferable or otherwise, are not as important to understanding performance as the concepts that account for how performative knowledge is generated, adapted, and influenced through personal, interpersonal, and environmental experience. This experience is nonlinear, which creates fluctuations and an element of human unpredictability in the abilities, knowledges, and values that arise from them. Secondly, challenging experiences can lead to negative developmental outcomes, but they can also lead to the development of attitudes and practices that are considered positive. It is important, then, to

work towards a balanced approach in organisational practices that promote a general awareness of what orchestral musicians require to perform effectively in their current environment as well as into the future.

Appendix A: Ethics Approval

GRIFFITH UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE

14-
Jul-
2014

Dear Mr Kennedy

I write further to the additional information provided in relation to the provisional approval granted to your application for ethical clearance for your project "NR: Learning in Professional Orchestras" (GU Ref No: EDN/48/14/HREC).

The additional information was considered by Office for Research.

This is to confirm that this response has largely addressed the comments and concerns of the HREC.

This decision is subject to:

Upon receipt of same, please provide written confirmation that participating organisations (e.g. schools and education authorities, government agencies, etc.) have approved access to their staff, clients, records, facilities, etc.

However, you are authorised to immediately commence this research on the strict understanding that these matters are addressed and that you provide details of how they were addressed.

Please note that failure to provide a timely response to these matters may result in this authorisation being suspended or withdrawn. The standard conditions of approval attached to our previous correspondence about this protocol continue to apply.

It would be appreciated if you could give your urgent attention to the issues raised by the Committee so that we can finalise the ethical clearance for your protocol promptly.

Regards

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Appendix B: Participant Information Statement

Learning in Professional Orchestras INFORMATION SHEET

Who is conducting the research

Chief Investigator: Prof. Stephen Billett
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Student Researcher: Jamie Kennedy
Griffith University student conducting research to fulfil requirements for PhD
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Why is the research being conducted?

The aim of this research is to investigate how musicians in professional orchestras learn during their everyday working experiences. Most of what is known about learning in music performance comes from research with students and their particular situation, such as their relationships with teachers and their goals for assessment and audition success. However, beyond attaining the goal of “becoming” a professional musician, little is recorded about how working musicians are influenced to change the way they play. This investigation is being carried out to understand how musicians learn when they are working in a professional orchestra.

What you will be asked to do

You will be asked to participate in a series of observations and interviews on your work with a professional symphony orchestra. You will be asked to consent to and participate in observations of the rehearsals and performances of three different weekly cycles, and take part in two interviews, one at the start and at the end of each of the three weeks. The interviews will take place in the rehearsal venue, immediately after the rehearsal has concluded, and will involve musical demonstrations, drawing mental representations, and discussing personal learning trajectories. The interviews will be audio-visually recorded.

The basis by which participants will be selected or screened

Participants for this research are sought from among the most recently joined members of a professional symphony orchestra, and aims to cover a range of instrumental sections. You have been approached, on the advice of the personnel managers, as a musician who fits these criteria and who may be interested in participating.

The expected benefits of the research

Participants may have positive experiences from taking part in the interviews and considering their performance and learning activities from a perspective they have not considered before. Interim feedback of findings may also be similarly enlightening. Overall, the outcomes of the investigation will improve our understanding of contemporary musical workplaces, and provide information about learning that tertiary institutions can use in developing curriculum for better preparing future professional musicians.

Risks to you

Participating in the interviews may lead you to think about stressful situations or sensitive issues related to your work, but the interviews will be conducted with due consideration for your wellbeing and may be stopped at any time.

Your confidentiality

Some data collected from interviews may make you identifiable, such as references to instruments or positions. However, the identities of the orchestra and individual participants will be masked in any publication of findings, for example, by changing personal details or by carefully limiting direct references.

Any records produced by the study, such as observation notes, videos, recordings or transcripts, will be kept strictly confidential and secure, and will not be shared with the orchestra or published. Interim findings related to your involvement will be shared with you for your information and feedback. This is to help avoid any misrepresentation in publication of the findings.

Your participation is voluntary

Your participation in this study is voluntary, and you are free to withdraw from the study at any time without any impact on your relationship with the orchestra or the researchers.

Questions / further information

If you have any questions or would like further information, or have any issues or concerns, please contact the chief investigator Prof. Stephen Billett on the contact details listed above for additional information about the project.

The ethical conduct of this research

Griffith University conducts research in accordance with the *National Statement on Ethical Conduct in Human Research*. If potential participants have any concerns or complaints about the ethical conduct of the research project they should contact the Manager, Research Ethics on 3735 54375 or research-ethics@griffith.edu.au.

Privacy Statement

The conduct of this research involves the collection, access and/or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University's Privacy Plan at <http://www.griffith.edu.au/about-griffith/plans-publications/griffith-university-privacy-plan> or telephone (07) 3735 4375.

Appendix C: Informed Consent Form

Learning in Professional Orchestras

CONSENT FORM

Research Team

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By signing below, I confirm that I have read and understood the information package and in particular have noted that:

- I understand that my involvement in this research will include taking part in interviews and observations of rehearsals and concerts during three different programs during the year;
- I understand that the interviews will be audio-visually recorded, and that recordings will remain confidential;
- I have had any questions answered to my satisfaction;
- I understand the risks involved;
- I understand that there will be no direct benefit to me from my participation in this research;
- I understand that my participation in this research is voluntary;
- I understand that if I have any additional questions I can contact the research team;
- I understand that I am free to withdraw at any time, without explanation or penalty;
- I understand that I can contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee on 3735 4375 (or research-ethics@griffith.edu.au) if I have any concerns about the ethical conduct of the project; and

I agree to participate in the project.

I agree to the audio-visual recording of interviews.

Name	
Signature	
Date	

Appendix D: Example Extract of Situated Immediate Recall

Interview

N.B. Square brackets indicate researcher observation or interpretation.

Interviewer - researcher (I): So I would like to know what's going on here, you know, what you pay attention to and how you work from here, basically. So can you tell me a bit about what you can see and what you're looking at from here?

Respondent – Chris, double bass player (R): Yep, so across to the conductor [motions and looks over to front], um, one of our main concerns, I suppose, is to be able to see the concert master as well [he scans string section area with head and eye as he speaks]. A lot of the bow strokes will be similar, and a lot of the bowings we put in [motions to music stand] are actually, um [points to violins section], the violins would play for a while and then we'd join them, so we actually share techniques across the kind of... that gap here [motions "over" to violins with hand]. Ah, and also with principal cello as well, because it's, you know, a lot of contrabass, double bass, octabass is doubling the cello in many parts of the repertoire, so a lot of the time I have to have connection with principal cello as well. Yeah, so that's certainly how I perceive, both key positions we can get away with most. And then towards the 20th century you'll be doing a bit more stuff with the brass, as a bass player. And bassoon of course, [motions over to them], so yeah, those lower leaders, because we've all got to lock in for intonation.

I: Is there any difficulty this week with the concertmaster being in the middle?

R: Um, no, it's good, we can still um, we can still see him. And he's probably a bit closer, um, for this particular setup. But what it does [pauses, looks at concertmaster's chair], when he's on... when he's in his usual chair, I guess, it's quite isolated and it's quite easy to see all the detail that he's putting in, whereas in the middle of the group it's a bit trickier, kind of, to work out who's moving and who's leading.

I: Yeah. I thought you looked kind of far away, like everyone else [motions to strings] is quite close to each other, and in small sections, it looks sort of far away, is it that far away?

R: Yeah, it's um, it's all about the peripherals really [mimes conducting hand movements, looking around room with eyes, little head movement], is where it suffers. So if the peripheral vision [looks to cellos, points to violins, can see them out of side vision] for the concertmaster, when I'm looking and engaging with him, is going to be a bit

far away to really engage with that. Um, the conductor's usually fine [looks and points at conductor, not far from his line of sight], the baton. Um, we've moved back a little bit for this rehearsal to be away from the brass a little bit, to try and have a bit more... ear for what's going on. Because the one thing about the bass is that we hear the least of our own instrument [motions from sound holes to head] than anyone else, or almost anyone else, because the violins, their instrument's right here [mimes violin, motions short distance between fingerboard and ear], the winds and brass, their head's resonating. Our instrument's all the way down here [points to bridge], and when another instrument's playing a similar volume there's actually... you can't hear yourself at all really. We have little tricks to use [leans ear right in to strings over fingerboard] and you can kind of feel what's going on [motions to body of bass just in front of torso]. You can certainly feel if it's wrong, but it doesn't actually give you an indication to being [short pause, pointing hand motion] sharp or flat or anything like that [motions forwards and backwards with hand, as if searching for right spot on fingerboard].

I: OK. Does that play a big part in terms of what you're paying attention to?

R: Yeah, yeah it really does. It plays a big part for... um, I think double bass players are very good ensemble listeners because of that, because you hear... I hear, you know, you hear everything except for yourself [motions around room and then points back down to spot on ground, location]. And so fitting yourself in [same hand motion, perhaps different intent], I feel as an instrument, lends itself to having more awareness for, you know, what's going on [motions to room] ensemble-wise and musically, or things like that. And also, if the bass is played well, you can then contribute in a way that matches it all together, and because your part [bass part], you'll be playing, you know, larger beats in the bar, and sometimes if you can see... you can hear where two parts are differing [motions to two different seats], sometimes you can just go in the middle of the two [points with decisive hand gesture], kind of really bring it together, or you can go with one and then [motions grabbing and dragging] and then bring them along to kind of draw in with what you hear. So there's a lot of scope in the instrument for having that kind of driving power in the ensemble.

I: Bringing them along?

R: Yeah, so there's [pause, smiles] two ways of resolving ensemble issues, if you're trying to do it from an instrument, one is to be a stickler [focuses gaze on music stand and motions beats, as if excluding all else] and maybe go with the stick exactly and be out

with everyone, and the other is to maybe go with everyone and then start [makes shepherding motion] bringing them along, which... both work in certain environments, but certainly bringing them along would work better in a dress rehearsal or a concert than... [laugh]. I think there's actually a lot of responsibility as well, for bass players to know the tempo before... [points to conductor, pause, mimes conducting tempo] ... um, to know what the conductor knows, um, in certain situations. [Still miming conducting] So not being so, um [pause] religious with the beat, but knowing the tempos [renews energy in conducting, focused look] and memorising tempos so that you don't get left behind. Because the moment you start taking too long on the bass, because the articulation's already hard enough, you can start falling behind and then it never works that way, you need that kind of... [clicks with tongue, lines up with hand beat motion, gaze focused on part].

I: You've got a fairly small section, and I assume not all three of you playing in the show?

R: Um, no there's only two in the shows.

I: Does that make things harder as far as hearing yourself?

R: It's actually easier to hear yourself, because when you have eight basses its really difficult to manage because it's so hard to hear. You can't hear... in lower frequencies [motions downward], they're not as directional in the large waveforms. So in... tuning the fundamental, it's hard to tell where the note's coming from [motions to either side], unless everybody, um [mimes playing with bow lower towards bridge], produces more overtones by creating a harsher sound, but it's not always desirable, to create a harsher sound [points to bridge]. So yeah, that's another balancing game, and generally with a smaller amount of sections it's a little bit easier, a smaller amount of players, because there's less variables. Um, yeah it's a different kind of playing as well, you can really listen in well to yourself, rather than, in a big section you really have to do your preparation and then trust yourself and just go for it [mimes playing, looking at own instrument], yeah it's a little bit difficult.

I: What's it been like this morning?

R: yeah, good actually. It's been nice being a little further away [motions to brass, bass location] so we can hear ourselves. We can actually hear more, it feels [motions over to strings], more of a balance of ourselves compared with everyone else, being just, you know, even two metres, two metres back. But yeah, early stages of a ballet, it's just finding out those tempos, that's it, yeah and really locking in to those tempos and

trying to get some good ensemble happening. Yeah, that's certainly what I've been thinking about [laugh].

I: Moving back behind the brass, is that something that happens often, or just today?

R: Um, no... well we've been playing around a little bit with our positioning, especially if we're close to percussion as well, that can really... intonation's really... we're really hard to hear ourselves, without, you know [makes violent bowing motion], completely [pause] attacking the sound, and... yeah it has been good to get back, a little bit, um because that balance... I guess what you want as a player is just a good balance [motions up and down with hands], you want to be able to hear everybody [motions to several chairs], not just one thing when they're playing. Yeah, because out there, the reality is that a lot of the time when you're playing that, everyone else will hear the bass better than you can in certain situations, so... you've got all this noise up here [shakes hand next to ear] and you don't know what's happening down hear [points to bridge], yeah it's a bit tricky.

Appendix E: Example Extract of Biographic Narrative Interview

N.B. Square brackets indicate researcher observation or interpretation.

Interviewer – Researcher (I): OK, now some people haven't really got this, but I think it's because I wasn't explaining it very well. What I want you to do is to think of a point in the rehearsal yesterday or on Thursday when things were going well, you know, when you had stuff to play and things were flowing quite well, and what I want you to try and do is to draw a bit of a map of the things that you're aware of at that particular point in time, what it looks like. Do you think you can do that?

Respondent – Evan, percussionist (R): Probably! [laughs]

I: OK, cool. I just say it because some people have just gone "... I just don't know what you mean" and...

R: You want me to draw a map of what I'm aware of?

I: Yeah, and this is at the point where things are going really well, you know, when things are flowing.

R: I'll think of one of those points now. [pause] It's a tough one [laugh].

I: Or it doesn't have to be this program, because if there's another point in recent memory...

R: Maybe, yeah OK... [pause] Alright, so I'm here, this is me... and do you want it spaced as in...

I: Yeah, um, you can draw it however you like really.

R: OK, sorry, this is... do you want me to outline where I'm talking about in the actual piece?

I: Yeah OK, sure.

R: OK, so it's near the end, so the 4th movement, so when most of the percussion... so, these are the things I'm thinking about... You don't want pictures do you?

I: Whatever you want to use. No wrong answers! [laughs]

R: [laughs] and um, what was I thinking about? [draws] obviously... [draws more] That's probably... that's where my main focus is at. Does that help?

I: Yeah, absolutely. OK, so let's do another. So if you can think of a point when things weren't going that well, for whatever reason, like it's feeling a bit uncomfortable.

R: OK [draws] Well the strings is kind of everywhere, aren't they, but mostly, it's mostly 1sts and 2nds, and ah, obviously, once again... [draws].

I: OK, so why the change in, you know, sections?

R: Ah, do you want me to write them, what they are?

I: Sure.

R: OK, so [writes]... and this one is the... [writes]. SO the main issues I had with these ones was... she [the conductor] was pushing, yeah too fast, and everything was just like a lot messier, strings didn't seem to, you know, catch up, in a way, um woodwinds did exactly the same... same thing here, and timpani, who's playing most of the time here, so this was just trying to... it wasn't meshing, whereas over here I thought that everything was... I think these sections were helping keep everyone together in the orchestra, in that point in time.

I: Yeah. And the conductor was a bit of an afterthought here? Well not so much an afterthought, but...

R: No, she was, because at that point in time I think there were enough forces here that are driving the tempo, that she's almost a little bit secondary. Whereas in this one, *I* felt... this is very personal, isn't it? It's just like pointing things out in the orchestra... but she was just racing. She's wanting something a little bit different to maybe what the orchestra thinks how it should be played, and maybe there's a bit of resistance, and you can feel that in those sections.

I: OK. Did anything come out of that conflict? What was the end result?

R: [long pause] I don't think we're there yet [slightly emotive], to tell you the truth, I think maybe we'll come together tonight, when everyone's hyper-alert, but it seemed to me that things were still not sitting correctly at the end of yesterday, and still don't know how it's happened today, so maybe, maybe it's different. I think she has, um relaxed a little bit at the start of the movement, in lieu [view?] of everyone's feelings, especially yeah, at those points in time.

I: Hmm. Whereabouts in the start of the fourth is this? Sort of after all the big opening?

R: Yeah the big opening, where we're doing the *accelerando*.

I: Oh yeah.

R: And the end is probably one hundred and... 131 onwards? I can write that in if you want me to!

I: Sure.

R: 131 onwards, from there, I can't remember the numbers... actually yes I do, 90, it's about 97 to about 102 I think.

I: Right, yeah, obviously the timpani's playing in both of these, but it also gets a mention. Would you say the timpani's... I don't know, does it takes up more of your attention than some other parts in the percussion?

R: I would say so, yes, because it's ah, right beside me, so I think I don't have a choice in that, in the fact that he's right there, and quite a lot of my stuff is with him as well, so I'm trying to sync with him, the bass drum and... oh not so much the bass drum, but more piatti, um and the rest of the orchestra, but yeah, it's always in my right ear so that's a determining factor in where I place my notes and everything like that.

I: Yeah, fair enough. Great, well that pretty much concludes that part of the interview. So I wanted to turn to a different kind of question, I want you to, if you can sort of think of when you first started playing with this orchestra, and can you tell me about the story of your experiences with them since then up to now?

R: Sure. OK, so the first gig I ever did, I don't think... do you remember your first gig?

I: Yeah.

R: Yeah, so it was [laugh] a laser light show, amazing. Anyway, I really enjoyed it, we were playing lots of music, lots of very classical music. Um there were... I played a whole range of instruments, I played from bass drum, cymbals, snare drum, maybe... probably not mallet instruments and all that, but that was pretty daunting. At that time, the principal was [pause] off sick for about... well, he was on leave for maybe four or five months, so it was me and some others, and it was their first gig as well.

I: Wow.

R: So it was pretty daunting, but it felt quite relaxed, so I thoroughly enjoyed it, there was... Everything went pretty well, the only thing I remember was I came in a bar... probably... maybe 32 bars too early in the Bolero [laugh]. But I was like 3rd snare drum, so it didn't really matter. From then on I think I got pretty consistent bookings after that, during that time. To tell you the truth, I don't think I can really remember what the next one was. I'll always remember that one, but I've got no idea about the second one. Um, main focus was probably bass drum, cymbals and triangle for about [pause] a year and a half, and then it turned a little bit more to mainly cymbals, and then after that mallet instruments and some snare drum. The snare drum's usually taken up by the principal most of the time. Um, in terms of how we got along in the section, everything was fine I thought, you know, we had a variety of sections, from... I think the largest section I played in was about nine, nine percs, and that was... I can't name everybody, but we played Salome's Dance. That was um... that was full on, but once again fun. Then we got more into the ballets and the operas, so that was probably maybe in my third year I started doing them, and probably in my fourth I probably got my first gig where I was possibly in control more, only one or

two percs were in it, so more of a leading role, or just a [pause] a more important role than just taking up 3rd or 4th percussion, so that... at that stage it gets a little bit full on because you're having to think about other things and you have to not only worry about your own part but someone else's part as well. Um, what else... I remember I went on tour with another guy and he was in charge, and it was just me and him, and it was full on [inaudible] so I was thrown on timpani at the last minute, um I freaked out because the chief conductor was in the audience, and he, back then, to me was like... he was... he was good, so I wanted to impress him. I remember in that concert we played [inaudible] and I was rushing, so that didn't look too good, but... apart from that, yeah... There was one time where he was in charge, the other guy, and one of the concerts we played with another conductor, I don't know what we played, there was a very delicate snare drum roll that went for about 16 or 32 bars, and it was ppp, and after two rehearsals I actually had to do that roll because he was not comfortable playing that solo on snare drum, so that... I actually said "I'll do it, so that's OK, I'm more than happy to just play that roll, play snare drum" and that went off without a hitch. Yeah, so... gained a little bit more confidence, and I suppose... what happened next? There was a couple of gigs that I was asked to do and... I don't know how this relates to anything, but I said no to them because I was actually on holidays at that point in time, and it was a very late call, and then it was a little bit tense between the principal and I for a couple of months, and in those sections maybe... maybe work died off a little bit, but came to, you know, started getting work again, and up until the audition, which was years ago now, almost four years? So that's how long I've been here. So up until then, my process through that period, we had a pretty hard time, we had a ballet, we had something else that I was doing something like two days before the audition. So my audition felt rushed to me, and maybe I started a little bit late, I think I took it a little bit too easy, and I was, you know, a little bit for granted... I don't think I was going to win anyway, so I wasn't putting everything into it, probably until about the last week and a half, and then I thought "OK, well this is actually getting good, so maybe I have a chance", so I just pressed forward and just practised as good as I could.

Appendix F: Example Extract of Typed Observational Fieldnotes

N.B. 4-digit number indicates time of day. Square brackets indicate memo of researcher interpretation or analytical speculation.

Deborah, Principal Viola. Repertoire: The Planets (Holst)

First call of the week, 10:00am-12:30pm, rehearsal in the orchestra's studios.

0940

I arrive at the doors of the studio at the same time as Deborah, she goes in ahead while I sign in and follow close behind. She goes straight to the rehearsal room, puts her instrument and belongings down in the audience and goes over to adjust her seat. We speak briefly about arranging an interview and about the participant information sheet, and she goes out of the room. She comes back in shortly after, unpacks her instrument and plays a few exercises (for about 2 minutes).

She takes her seat, puts her instrument on her desk partner's chair, and arranges her music. Some violas from 2nd and 3rd desk approach her as she sits, and she turns around to talk to them. She returns to her music and looks through it, reading through with her eyes, not playing or really moving, and this goes on for some minutes.

[The program today is significant repertoire - The Planets and a violin concerto - but it is for an "entertainment" program that is expected to be popular, "a journey through the cosmos" story narrated by an MC].

0957

Her desk partner (and associate principal viola) has come in and takes his seat next to her. They greet each other and chat a little bit. The manager comes over to speak to her. Deborah occasionally looks up at me. She chats again with her desk partner while everyone warms up and plays through their parts.

1000

The winds tune, and Deborah and partner sit looking at their part, not moving, and then tune with the rest of the strings. The orchestra goes quiet and the conductor gives them a talk about the concert, saying how great it's going to be. Deborah is looking directly up at him - she is sitting quite close to the conductor's position, perhaps 2m.

They begin Mars. Col legno in the strings, and Deborah appears to be looking just at her part and listening in to her instrument. She is now playing normally (arco) and looking directly at the music. Her torso moves slightly back and forward, and the movement appears to be connected to the music. They play repeated crotchets, Deborah looks around slightly to her left, possibly at the conductor and concertmaster, and then back to her stand after about 2 bars.

As they play a softer bit, she occasionally inclines her head to the instrument and then back up again. The violas are playing a rhythm with the snare drum, and Deborah's bow appears to me to be moving just slightly ahead of the other violas, and (to my ears) the closest to being in time with the snare drum.

At the end of the piece, the orchestra play separated accented crotchets in unison, and her the motion of her bow arm wasn't precisely the same as her partner's. They discuss something very briefly, pointing at the part.

The orchestra begins Venus. The violas are resting, and Deborah is sitting upright with her instrument on her lap, looking at the music. As the cellos come in, she picks up her instrument and calmly brings it up to play. As it goes on, the violas drop out, and Deborah returns to sitting upright with the viola standing up on her lap while the violins play. They come in again and play slow, repeated crotchets, and her body sways back and forward in time and with the crotchets and with the intensity of the dynamics. They play quavers, and again her body still sways with the crotchet beat.

1015

After a slightly louder bit, the violas drop out again, and Deborah marks her part, sits back, and then leans in and marks her part again. She sits back and sits upright, motionless, to wait while the other strings play.

They start Mercury. The violas play intermittently, and during rests of even a bar's length, Deborah brings her bow arm down to rest on her leg, and appears motionless, but when she is playing her torso and left arm tend to move with the intensity or rhythm of part. Last note of the phrase was a sforzando, and she used a vigorous ending with the bow arm. She uses very little motion in the lead up to the pizzicato, but still a slight, perceptible pre-movement and post-movement (away from the string).

Before playing Jupiter, the conductor speaks and she looks straight up at him. They begin, and most of her movement appears to match the rhythm. During a long trill, she taps

her foot very lightly. She makes slow, big bow movements during small quaver rests between notes.

[Her movements can be generally characterised as minimal but efficiently demonstrative. Sometimes she appears motionless, generally when not playing, but was using a combination of body and arm movements connected to note length, dynamic or sound intensity and phrase shape, and bow movements (on and off the instrument) connected to rhythmic aspects of the beginning and end of sounds.]

1030

Towards the end of phrase, she dips the head of the viola down on the loudest accent and high point of the phrase. During the pizzicato, her bow arm kept a constant circular motion. After they finish, she quickly leans in and marks the part and returns to her neutral posture. The conductor steps down to talk to the cellos and point at their part. The orchestra talks amongst themselves; Deborah and partner talk, and then he plays a passage quietly while she marks the part. The conductor steps up to give comments and everyone falls silent.

They play Saturn. Deborah makes no movement as she counts the rests. The violas play a long note with a crescendo and decrescendo - she makes a small torso movement forward that mirrors the intensity of the dynamic. She inclines her head to the viola for a few seconds of playing. As they rest, the 2nd desk violas are marking their parts, while Deborah and partner are very still.

They play repeated crotchets that get louder, her bow arm increases the height of its circular/rhythmic motion. They play a very slow soft entry, and there is almost no movement at all from Deborah on the entry - her bow was right down at the tip and started extremely slowly. The note changes occur with pre-movement down and then an up on the note itself.

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