

## **Practising in the new world: Strategies for preparing contemporary music for first performance**

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**ABSTRACT:** The purpose of this case study was to investigate the practice strategies used by a professional orchestral musician to prepare for a première. A member of the woodwind section of one of the top seven orchestras in the United States was interviewed for approximately six hours about strategies used to prepare newly composed music and factors that determine the amount of time needed to prepare prior to first rehearsal. For the interviewee, practising generally focused on anticipating how his part fitted into the ensemble through score study and preparing for what the conductor might demand. He also discussed rehearsals and how these rehearsals anticipated the performance. The practice strategies discussed by the interviewee were designed for use in the unique circumstances associated with preparing for the first performance of a new work: learning difficult and original music, without an aural model, in a short amount of time. These included the use of various types of technology (e.g., recordings, notational software, recording software) that were often used to create an aural model of the piece being practised. The application of strategies to pedagogical situations is discussed.

**KEY WORDS:** orchestral, practice techniques, expertise development, music performance, music practice, instrumental music, aural model, technology

The present study was designed to discover the practice strategies used by expert orchestral musicians with the goal of applying the strategies to pedagogical situations. As educators and musicians, we are primarily concerned with teaching students to practise effectively and efficiently. Because most American children learn music in a school ensemble setting (i.e., in orchestras or bands), the study of how expert ensemble musicians practise provides the most direct insight into effective practice techniques for novice musicians.

We were strongly influenced by the theory of expertise development (Ericsson, Krampe, & Tesch-Römer, 1993). Ericsson argues that the development of expertise in a domain such

as music arises from years of deliberate practice rather than from innate talent. Deliberate practice is attentive, goal-directed practice and goes beyond passive exposure or more superficial practice strategies.

Also, we were informed by previous research on practising, especially that of Hallam and Chaffin. Hallam (1995a) interviewed 22 freelance musicians about their practice routines. There was considerable variation in responses, but there were also some similarities that allowed Hallam to group the musicians as either Analytic Holists or Intuitive Serialists. Analytic Holists listened to recordings, cognitively analysed the structure of the music, and sought underlying meanings and connections between musical elements. The Intuitive Serialists rejected cognitive analysis and resisted external influences including listening to recordings, letting their understanding of the piece emerge naturally through the playing of the piece. When learning technically challenging music, the musicians either used a repetitious approach, playing slowly with a metronome and systematically increasing the tempo, or an analytic approach, changing rhythms or other musical elements. Hallam excluded full-time orchestral musicians because of the limited time available for their practice. We felt that this population of musicians may have developed highly efficient practice strategies for learning music *because* of the constraints on their practice time. Consequently we chose to focus on orchestral musicians in the present study.

Chaffin and colleagues (e.g., Chaffin & Imreh, 2001; Chaffin, Imreh, Lemieux, & Chen, 2003; Chaffin, Lisboa, Logan, & Begosh, 2010; Ginsborg & Chaffin, 2011) explored the range and nature of practice strategies available to performers by analysing video-recordings of expert musicians practising solo works over extended periods of time. The researchers identified four main stages of practice: an Overview Stage in which the piece was sight read and explored as a whole; a Working Stage in which the piece was fragmented for intensive section-by-section practice; a Polishing Stage in which the fragments were reassembled and memorisation for the music tested; and a Maintenance Stage, which consisted of playing through the piece in preparation for performance. One important finding from Chaffin's work was that musicians segment the piece for practice based on compositional structure, starting and stopping at phrase boundaries.

Based on our background as musical performers<sup>1</sup>, we came to this research with views on how experts practise, and we expected differences to emerge between the practising of solo and ensemble works. In solo works, one musician is responsible for producing all aspects of the music; an orchestral musician contributes only one part to the whole piece. The practising patterns identified by Chaffin may not apply to orchestral musicians. For instance, orchestral musicians may not sight read through the piece to form an overview of the whole work since playing one part in isolation will not necessarily provide the information required.

Investigation of the practice behaviours of expert musicians has relied heavily on case studies and interviews (e.g., Clarke, Cook, Harrison, & Thomas 2005; Hallam 1995a,b; Hallam, 1997; Sullivan & Cantwell, 1999). We chose a qualitative semi-structured interview method for this study in order to compare results with those of previous research while

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<sup>1</sup> One researcher is a collaborative pianist and flautist and the other is an orchestral violist, both active performers at the time of this research.

maintaining focus on the unique approaches musicians have to learning music for performance. This method also allows the broadest possible range of themes to emerge. To elicit maximum discussion, we devised interview questions that concerned the preparation of newly composed music for its first performance. By asking specifically about practising newly composed music, for which there was no aural model, we hoped to place experts in a context that removed some of the influences of past learning.

When performing standard repertoire, previous experience and expectations guide musicians' practice. Even if a particular piece has not been performed previously, a cognitive representation of the piece may exist, built up from hearing the piece or performing pieces similar to the one being learned. Music composed in the twentieth or twenty-first centuries, on the other hand, is often based on an extended tonal or atonal system and can be technically challenging. Because it is played less frequently than standard repertoire, musicians have fewer opportunities to play or hear this music and therefore to become familiar with the technical patterns and the compositional logic.

We thought it possible that a difference would emerge between the way musicians talk about practising newly composed music and standard repertoire. Clark, Cook, Harrison, and Thomas (2005) collected interviews, diaries, and audio files from a professional pianist learning a newly composed piece (Bryn Harrison's *être-temps*). The performer distinguished the learning of the new composition with the learning of standard repertoire. For instance, the performer rejected the notion of form structuring his learning of the piece. The performer wrote:

Quite early on...I concluded that it was not my concern to try to determine how sections are related to each other in time.... Without the need to relate the specific material of each moment or section to the whole (as one might, for example, in music by Brahms or Schoenberg), the need to spend prolonged time investigating the nature and potential of the material itself seemed much more pressing. My focus was on each moment in time – the weight of a chord, the transparency of a single line, the degree of attack – and less on the linear relationships (pp. 38-39).

The purpose of the present study was to investigate the practice strategies used by professional orchestral musicians when preparing to give the first performance of a new work. They have limited time to practise their own parts and rehearse with the orchestra. The composer may have used non-standard compositional techniques and notation. There is no performance history, so there are no aural models. Taken together, these factors combine to make preparing for a first performance a unique situation, requiring musicians to use practice strategies different from those needed when preparing standard repertoire. We hoped that guiding the musicians' attention to these unique situations would elicit specific practice strategies that might not otherwise come to mind.

### CASE STUDY: METHOD

#### Design

In this article we report only part of the wider study: a case study of a single woodwind player in one of the top seven orchestras in the United States, according to an editorial in *The Gramophone* (2008) headed "The world's greatest orchestras" (p. 36), whom we interviewed about his practice strategies.

### Interviewee

At the time of the interviews, the musician had been a member of the orchestra for 16 years and had held other full-time orchestral positions. He was deliberately chosen for an “information rich” case study (Patton, 2005, p. 230). He has a familial relationship with one of the authors of this paper and had shown a keen interest in the topic. Based on previous conversations, we knew he had thought about practice techniques extensively and had developed some ideas potentially of interest to others. The case study served as a pilot for the interview schedule and procedure, but also provided the data reported below.

### Materials

The questions used to guide the semi-structured interview were:

1. What factors determine the amount of time you need to prepare a new piece prior to the first rehearsal?
2. What strategies do you use to prepare newly composed works?
3. What do you find are the most challenging aspects of preparing a piece for première?
4. I’m going to show you a copy of a piece of music that you prepared for this season [*Fibers, Yarn, and Wire* by Alexandre Lunsqui]. Describe the process of preparing this particular piece for performance.
5. How has preparing pieces for premières informed other aspects of your playing or teaching?

Questions 1 and 2 were similar in content to those posed by Hallam (1995a) asking for estimates of time spent practising, and strategies. Question 3 focused the interviewee’s attention specifically on newly composed works and in Question 4, a piece of music was used as a memory prompt. This strategy has been used effectively by Hallam (1997) and Sullivan and Cantwell (1999). Question 5 was designed to help bridge the gap between the practising strategies reported by an expert musician and the application of these strategies to pedagogical situations.

### Procedure

The musician chose to be interviewed in his home studio. We interviewed him for approximately six hours over the course of two days. The interviews were both audio- and video-recorded. The questions were used to open a dialogue with the musician, although additional questions and topics were explored throughout the semi-structured interview. At times, he would perform on his instrument, play recordings to highlight a point, or refer to personal copies of parts and scores. He also referred to fragments of the score that he had notated himself using a notation program. We allowed the musician as much flexibility as possible to articulate his practising strategies. When he moved the discussion to a related topic, no attempt was made to bring him back to the initial interview question. He spoke freely about his experiences of preparing for, and giving first performances. However, the description he gave of a particular first performance (accounting for approximately five minutes of the six hour interview) was omitted from the analysis at his request.

**Table 1.** Themes emerging from the interview

*The themes emerging from the interview are listed in order of the amount of time spent discussing each topic, based on transcribed word count (in parentheses).*

Theme	Sub-Theme	Specific codes
Rehearsal	Preparation anticipates rehearsal	Coordinating with others / Function within ensemble (2522) Anticipating conductor (1606) Anticipate technical or logistical problems (1594)
	Rehearsal anticipates performance	Coordinating with others (2598) Coordinating with conductor (1586) Specific to premières (1095) Technical or logistical problem (83)
Technology	How technology is used	To find patterns aurally and technically (1628) As a metronome or unique click-track (1490) To re-notate for understanding (1488) To create an aural model (1466) To fit parts together (741) To play along with recording (390)
	When technology is used	To preserve practice time (430) When a recording is available (353) To preserve physical abilities (315) When there is no aural model (304) When travelling (146) With particularly difficult passages (107)
Practice time	Amount of preparation time required	Efficiency in practice (2097) Advanced planning (1628) Rehearsal time / Changing repertoire or assignments (792) Experience reduces practice (551) Individual differences (189) Returning from injury (88)
	Work load	Amount of music to practice (171)
Aural Models	How aural models are used	To determine end effect, goal (1661) As Tutor (1113) To determine style (1040) To fit part into ensemble (548) To extend physical practice time (341) For problem identification (200)

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Score Study		Determine function in ensemble (2062) Use score to assess difficulty (786) Library procedures (61)
Instrument / Equipment		Equipment decisions for different performance conditions (940) Instrument modification (680) Management of equipment (659) Equipment decisions as part of practicing (620)
Musical Language	Composer's Expectations	Notational information/patterns (1219) Style and interpretation (1201)
Changing Notation		To preserve musical effect (2131) Substitute (alternate) fingerings (852) Composer's ignorance of instruments/technique (177) Changing rhythms (17)

### Analyses

The recordings of the interviews were transcribed verbatim, and the two authors initially conducted individual thematic analyses of the content using a process detailed by Braun and Clarke (2006). We then collaborated on the final coding. To lay the foundation for validity, we did not discuss themes until after our initial, individual analyses were completed and our initial codes generated. We then re-analysed the interview together comparing the codes that had emerged during our individual analyses and categorizing the codes into themes. Through discussion we developed a common understanding of the themes and sought the fewest themes that we both agreed represented the most amount of information presented during the interview.

We then constructed a timeline, matching interview data with the multiple sources of information gathered throughout the interview (e.g., photos of scores, recordings of the musician playing, computer screen shots, and videos of the musician working at the computer). This provided context and additional support for our thematic understanding and specific musical examples of the themes. The timeline also allowed us to see relationships between the specific pieces of music he mentioned, and the images allowed us to see when and how often he referred to a computer or other technology.

Finally, we presented our understanding of the themes to the interviewee for verification. This procedure elicited additional information from him, but did not necessitate any changes to the final thematic analysis.

While we initially intended to use the interview questions to provide the coding structure, it quickly became apparent that the emerging themes did not relate neatly to the topic of just one question. Themes were repeated throughout the interview and unforeseen information emerged, so this coding structure was abandoned. Table 1 details the themes as they finally emerged, together with the types of information coded within each theme. The themes are listed according to the amount of time the musician spent talking about the topic in question. Although presented as discrete themes, they often overlapped with each other. We define and organize the most important themes in the Results section below.

## RESULTS AND DISCUSSION

The musician discussed the practice strategies he used in the particular situation of preparing to perform a new work at its première. He was asked specifically about preparing *Fibers, Yarn, and Wire*, but throughout the course of the interview, he also referred to practising for the first performances of *One Sweet Morning* by Corigliano, *Neverthesamerivertwice* by Yim, *Time Machines* by Currier, *The World's Ransoming* by MacMillan, *Vaporized Tivoli* by Hillborg, and *Seeing* by Rouse. He also discussed practising and performing standard repertoire including *Rite of Spring* by Stravinsky, *Symphonie espagnole* by Lalo, *Symphonie fantastique* by Berlioz, Ravel's Piano Concerto for the Left Hand, Symphony No. 4 by Beethoven, *Jeux* by Debussy, and *Wozzeck* by Berg.

### 1. Practice time

Practice time was variable. The musician estimated that he had once practised approximately 8 hours to play a single 5-minute piece (part of a 2-hour programme). When asked what factors determined the amount of time needed, he replied in a light-hearted manner, "Are there a lot of black notes? [laughter]" He then expanded his response:

You don't know how much preparation time something is going to take ... until you really start digging through it - how complex are the rhythms? ... Are there patterns? ... [Do] you learn the first two lines and now you have 80% of the piece? Or everything is different, there's nothing ever repeated?

The musician emphasized that practice time is different for each piece – and each musician:

Some of these people [in the orchestra] are so adept at absorbing music they can look at something...play it through once, and pretty much be up to speed on it. I mean it's frightening.... they'll spend 4 minutes on it and I spend 4 hours.

### 2. Individual Practice Strategies

The musician frequently discussed the use of scores, recordings, and technology to assist in learning music. This approach seemed to have much in common with the Analytical Holists described by Hallam (1995a,b). We identified two common themes unifying the strategies: the importance of developing an aural model and the importance of understanding the language of the composer.

#### 2.1 Score study

The musician described himself as "the canary in the coal mine" since he is usually the first player to obtain the score from the orchestra library for an upcoming première and assess its level of difficulty. He estimated that he studies scores for about 90% of pieces premiered by the orchestra: "I'm looking at the big pictures here not doing any real in-depth analysis." In general, he studies the score to determine the difficulty of his own part and its function in the ensemble. Practising with a view to coordinating the individual musician's part with the ensemble was a major theme, which will be addressed in the next section of this paper. In the case of premières, it is particularly important to obtain scores, since recordings are not available. However, he reported that he also seeks out scores of pieces that are new to him, although they have already received their first performances.

...not knowing the piece is a big thing....first I will look [on] YouTube because it is the most immediate ... [if] there's anything that triggers I should look at this score, I'll then go look at the score. So I may go look at the score as a trigger from having heard it on YouTube. Or vice versa. I'll look at the score and say I should see if it isn't a première, if it isn't already on YouTube....

### 2.2 Aural Models

The musician listens to, and plays along with recordings of pieces he has not previously performed. He generally tries to find multiple recordings with varied tempi.

Listening to the recording was the initial thing and then along the way at various times ... I would put on the recording and play along and say 'Where am I having trouble? Where do I fall off? Where do I lose my sound in the orchestra...?'

The musician reported that the orchestra now requests composers of new music to send an MP3 file with the score, but that is not always available. When a recording is not available, he seeks out recordings of other pieces by the same composer.

You can get an idea of what this composer's language is and the *ease* of finding the resources has greatly expanded....now there's stuff on YouTube that can really help guide what your expectations are going to be...you can go listen to four pieces of a certain composer and get an idea of what their music is about.

The importance of having the composer's language "in his ear" was a theme throughout the interview. When an aural model was not available, the musician would create an aural model using technology.

### 2.3 Technology

The musician reported using technology during practice, other than recordings, to provide the missing aural model or for deeper understanding of the music. He uses various computer software programs, including Sibelius for music notation and Amadeus Pro for recording, to help with practising difficult passages. For example, he might record himself playing one bar at a time very slowly, coordinating with a metronome playing through a headphone. He used the recording program to link the bars together and play them back to himself at the speed at which they would eventually have to be performed. Thus he would be able to *hear* the sound of his playing at performance tempo before he was physically able to *play* the music at tempo. This enabled him to make a mental leap:

Instead of gradually working it up, fighting my way up.... I can hear *there*, where there is. And sometimes it gives me just sort of a leap ... once you know the result, you have it in your ear, to say ok let's just produce that.... Once it's in the ear, the ear will guide the fingers.

A tool more sophisticated than a metronome is needed when tempo and metre change quickly, as is often the case in contemporary classical music. The musician reported using notation software to create click-tracks, specific to the work to be performed, in which tempo relationships and complex metre changes can be controlled.<sup>2</sup> He then deploys the strategy of repetition described by Hallam (1995), practising difficult sections at a very slow

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<sup>2</sup> As an example, the musician showed us a click track created for *Fibers, Yarn, and Wire*. In one section, the metre changed from 2/4 to 3/8 to 2/16 over the course of 3 bars.



tempo with the click-track rather than a metronome and gradually increasing the speed until they can be played at performance tempo. The musician refers to this strategy as “digging it out”.

Another strategy is to copy difficult sections of the music using notation software from which an aural model can be created and played back through the computer speakers or headphones. The musician can also add other instrumental parts from the score to hear how their rhythms or pitches coordinated with his, or to hear cues for entry. At times, he referred to the computer as his “tutor”. In addition, this process of notating difficult sections helps him find patterns.

You begin to see the pattern .... Cut and paste. Cut and paste, just change the notes .... Then when I listen to it, it confirms already what I learned from having put it in [to the computer] because I’m watching for where things repeat.... If you think about Bach understanding Vivaldi by having transcribed a lot of Vivaldi’s stuff and adapting it, he saw Vivaldi’s ... compositional techniques while he was copying, and he probably integrated that into his mind about patterns ... Just by copying it you begin to understand that composer a little bit better.

Eighteenth-century musicians learned to understand the language of other composers by copying their scores and applying the knowledge they gained in this way to their own performing and composing. Thus the interviewee’s strategy uses modern technology to replicate a centuries-old tradition.

The musician also described changing the composer’s original notation of the score when entering it into the music-processing program, in order to assist his understanding. This strategy is particularly useful when the rhythm is complex. Sometimes rhythms or metres are simply augmented, for example changing semiquavers (sixteenth notes) to quavers (eighth notes) so they are easier to read, or altering the metre by adding or subtracting bar-lines to highlight patterns. It is common for musicians to remind themselves of accidentals by adding them to the score, but the interviewee would on occasion rewrite a problematic section enharmonically:

Some composers ... for one reason or another maybe it’s for their harmonic language - will mix and match sharps and flats a lot.... It can just be hard to read... but if you put it into all flats... you start getting it into your fingers, once it’s in your ear and your ear guides your fingers than it’s easier to cope with seeing the sharps and flats....

We should note that the musician rarely performed from a re-notated part. Re-notation was primarily used as a practice strategy.

The interviewee also used the notational software to create piece-specific études that enabled him to practise difficult techniques in isolation:

I’d created a little exercise out of some descending scales that occur in Debussy’s *Jeux* which we don’t play very often, just to get this in my ear... when it’s not in the ear, the ear doesn’t guide the fingers and the fingers are lost. And you have to read *more* and the notes go by faster than I read, so if I can get this in my ear somehow it would be helpful.

To summarise, the strategies using technology discussed above are used primarily when a part is particularly difficult, for efficient learning, or to preserve physical stamina. For the interviewee, practising is not just about learning the notes and rhythms of his individual part, but, as we shall see, also involves preparing for rehearsal with others.

### 3. Coordinating with Others

We designed the interview questions to focus the musician's attention on individual practising strategies prior to the first rehearsal, but it became apparent through our thematic analysis that practising technical problems in isolation on the instrument is not the musician's only concern – maybe not even his primary concern – during practice. He also focuses on practising to anticipate the demands of the conductor and coordinate his part with others in the orchestra.

#### 3.1 *Function in Ensemble*

The musician frequently described using the score during practice to understand his various functions in the ensemble. As he explained:

You take raw clues from the score about what your function would be. Are you in a chorus? Are you in a chorale, spread out? Are you in an accompanying situation? Do you have a secondary line? A contrapuntal line against the melody? Are you the melody? Are you some form of the background and is it background that's real shimmering and murky and it's not going to really matter the exact notes because everybody is noodling around and it's just this general murmuring, or is it very note specific? That can save [practice] time....

Rarely do musicians practise together prior to rehearsal. The interviewee described a collegial attitude towards practising where some players “watch each other's backs” – noting places of particular difficulty for other instruments in upcoming pieces or an awareness of where parts must fit together and then discussing them with the other players. For premières of chamber pieces, however, performers in the interviewee's orchestra have initiated “non-mandatory” performer-driven (rather than conductor-driven) reading rehearsals to assist the learning of music to be premiered.

[The conductor starts] out in real tempo and we'll say 'no, no, no slower' and he does it a little bit slower. We'll say 'no, no, no slower.'.... and we take him down to about half tempo because what it's really about is understanding the interweaving of the parts.... [and] then you have time to absorb who's playing what when.... So we can tell [the conductor] 'let's take this at 1/3 the speed...and let's just dig this out' and we don't do that normally in a regular rehearsal.

It was apparent to us that for these musicians, the aural model is so important that they want a rehearsal devoted to the task of hearing individual parts in the context of the whole texture of the piece. In the rehearsal described by the interviewee, the performers utilised the familiar strategy of repetition, starting slowly and increasing the tempo, but communally rather than as individuals. Clearly orchestral music cannot be fully understood by the individual who has only practised his or her part in isolation. The interviewee studied scores to understand his function in the orchestra and participated in reading rehearsals in order to place his part within the whole.

#### 3.2 *Anticipating the Conductor*

Predicting how the conductor might interpret and conduct the music is a major source of concern during practice. For instance, composers may notate tempo markings generally (*allegro*) or specifically (crotchet [quarter note] = 120), but the conductor will set the actual performance tempo. The interviewee reported anticipating the most extreme tempos when preparing his part. Another source of concern is where the conductor will place metric

emphases in mixed-metre sections. The interviewee considers various possibilities, marking in his part the locations he thinks are most likely to be chosen, but is always ready for alternative interpretations if necessary.

### *3.3 Changing Notation*

When practising, the musician is also concerned with the overall effect of the music and the adjustments that may need to be made to create the best performance possible. These adjustments, somewhat surprisingly, might include omissions:

One of the things that you learn in an orchestra is that – you kind of have this mantra of ‘first do no damage.’ The corollary to that is that ‘an error of omission is not as bad as error of commission.’ So once in a while, you’ll sacrifice a note out of a passage in order to have it hang together and that’s better than trying to get every note and have it be just a complete mess even at your best. So once in a while you strategically plan to leave out a note.

On occasion, players in a section decide to divide parts differently from the way notated in the composer’s original score, for instance dividing one player’s part between two players. As the interviewee noted, “having it cleaner and everything pristine is much better than two players struggling.” Some changes are made to accommodate limitations of the instrument of which the composer might be unaware, or when the composer appears to want a particular musical effect but is unconcerned as to the techniques used by the performer to achieve it.

Composers are often present at rehearsals for first performances, and we asked if they mind if performers change the way their parts are notated.

Composers can sometimes be really sticky about their ideas and sometimes they’re completely flexible. ‘Oh, you can’t play that note? Well just take it down an octave.’[Laughter] It’s no big deal.... This is the best way that they’re going to get something close to what they had in mind and that’s our [the players’] decision.... There’s so much [the composer is] processing. And if they’re hearing something that sounds really close to what they wrote ... they never question how you’re doing that.

It was apparent from the discussion that omissions and division of parts are not restricted to new works being performed for the first time as the interviewee provided examples from standard repertoire too. The focus is on the ultimate goal of presenting a high-quality musical performance, even if one is not absolutely faithful to the notated score. Division of parts also highlights the social aspect of orchestral playing, as the section comes together to decide how they will go about achieving the best musical performance.

### **Summary**

The interviewee reported the use of individual practice strategies to prepare his part technically while also focusing on the way his part coordinates with those of the other members of the orchestra. There seems to be a willingness to explore all potentially useful strategies for producing a performance of the highest possible quality of difficult music, including the use of various forms of technology. Some strategies are relatively simple, such as enlarging musical notation to make it easier to read. Others are more elaborate, such as the use of notation software. The interviewee sought both an intellectual understanding of the music and an aural model of the final musical product. Musicians at all levels of expertise could make use of all the strategies he reported.

### GENERAL DISCUSSION

The musician interviewed in this case study reported strategies exhibiting many commonalities with those described by Hallam (1995) and Chaffin and Imreh (2001), but there were also differences. One finding from Hallam's study (1995b) was that musicians use either a strategy involving repetition (slowly "notching up" the tempo of a difficult section with a metronome) or an analytic approach (e.g., changing rhythms) to their practice. The interviewee in this study described using both approaches, depending on the difficulty of the music. For moderately difficult music, repetition suffices ("digging it out"). With difficult twentieth and twenty-first century pieces, the musician employs analytical strategies, which he also uses to practise familiar repertoire more efficiently. For instance, he described copying standard études into a notation program to help him find patterns more quickly. He did laughingly characterize this practice as "laziness", but admitted that he learned the études much faster than would otherwise have been possible.

Hallam identified two approaches to practising, but this research may highlight a third, technology-based strategy that may have emerged amongst musicians since the publication of her study.<sup>3</sup> Today's musicians may have altered their practising strategies over the last two decades to take advantage of the increasing availability of technology. It is also possible that the technology-based strategy emerged only because the focus of the interview was on preparation for the first performances of contemporary music. The difficult techniques and extended musical language of contemporary music may push musicians to find alternative practice strategies. While the interviewee reported using technology-based strategies for the preparation of standard repertoire, he had identified them as useful, initially, in the course of learning difficult new works about to receive their premières.

We interpreted the information obtained in this interview within the context of Chaffin & Imreh's (2001) stages of practice. We saw many similarities between Imreh's strategies for practising music for solo performance and those of the interviewee, but differences between the stages of practice were also reported. While the interviewee did not discuss sight reading or playing through the entire piece (Overview Stage), he does seek out recordings and scores of other works by the same composer, where available, to understand his or her musical language, and how the musician's own part fits into the whole. There is a Working Stage where difficult sections are practised before the first rehearsal. How long the Working Stage lasts depends on how long there is between receiving the music and the first rehearsal, and the difficulty of the other music that has also to be prepared. Following the first rehearsal, there is a stage somewhat analogous to the Polishing Stage, where attention shifts to practising for the performance. It should be noted that for the interviewee, the time between first rehearsal and first performance is likely to be less than a week. During this time, he attends to ensemble issues (e.g., adjusting pitches within chords, coordinating parts, matching the conductor's interpretation/tempo). However, the technical practice begun in the Working Stage continues until the performance. The interviewee continues to address difficult sections, as well as technical challenges identified during rehearsal. While no stage of practice analogous to Chaffin and Imreh's Maintenance Stage was reported, dress rehearsals may function in this manner. The

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<sup>3</sup> We should like to thank one of the anonymous reviewers of this paper for suggesting this possibility.

interviewee did not report segmenting the music according to its phrase structure, as Imreh did, although it would be necessary to confirm this by directly observing the musician's practice.

It is important to note that while most of the research on practising to date has focused on pianists and other unaccompanied performers, soloists performing accompanied works are actually performing in a collaborative setting. Practice strategies could very well differ depending on whether the piece is written with accompaniment. While there has been research on performers collaborating in rehearsal settings (e.g., Ginsborg, & King, 2012; Ginsborg, Chaffin, & Nicholson, 2006) more information is needed to understand how musicians prepared independently for the rehearsals.

These conclusions are based on a single case study. Further research with more musicians is necessary to investigate whether orchestral and solo musicians practise differently. Practising is an individual activity and it is possible that generalizations amongst performers – even players of the same instrument – are not possible. It would also be important to ascertain whether our interviewee is atypical in his use of technology, or if he is one of a growing number of such users, as suggested in recent research (Ginsborg, Prior, & Gaunt, 2013).

### **Pedagogical implications**

Many of the practice strategies described by this professional orchestral musician are available to both students and experienced musicians. Because the interview focused on preparation for first performances of new music, the musician described practice strategies that have not been widely explored in the literature. As performing musicians, we have adopted several into our own practice. For instance, both authors frequently practise with recordings using an app that allows tempo manipulation (*The Amazing Slow Downer*). We regularly enlarge our instrumental parts, especially those that are handwritten. We also copy difficult sections using notation software, altering enharmonics for ease of reading and rhythms for better understanding. Teachers should not limit the use of practice strategies, but think of them as existing along a continuum. For instance, aural models should be encouraged alongside reading-based strategies. Deeper understanding of patterns and compositional techniques should accompany repetition for the purposes of achieving technical improvement.

In general, the ear should be actively engaged during practice to ensure that technique serves the musical effect. As the interviewee noted many times, “the ear guides the fingers.” Students should be encouraged to sing especially difficult passages so as to internalize their melodic contours and musical features. “Shadow playing” (fingering the instrument) while singing could promote the synthesis of aural and motor information, as could creating and listening to a slow recording to serve as an aural tutor.

It is essential to listen to recordings so as to develop an understanding of how an individual part fits within the context of the whole piece. Multiple interpretations are now available via YouTube and other sources. Teachers can choose those they believe to be the most appropriate and recommend that their students listen to them carefully. Playing along with recordings at varying tempos, using a readily-accessed app such as *The Amazing Slow Downer*, is equivalent to practising slowly, in the context of the whole piece, with a metronome.

Technology allows the creation of aural models when none is available and also enables the musician to create 'practice parts.' When technical problems in a difficult passage cannot be solved using repetition, musicians could use music-processing software to re-notate the difficult passage so as to make it easier to read and play it back via the computer at different tempos, slower then faster. Since the instrumental part thus created is for practice rather than performance, the musician can manipulate the original notation creatively to enhance personal understanding. The copying of the original into notation software is in itself a form of practice strategy enabling a deeper understanding of how the music was composed. Teachers should not fear this approach, as it can be considered the modern equivalent of Bach finding patterns in Vivaldi's compositions while copying them. Playback enables the musician to hear the patterns. As the interviewee noted several times, the computer thus becomes a tutor.

When students first start learning a piece, teachers should discuss with them the composer's musical intention, how the piece is structured and where its highlights occur. Even the youngest musician can create stories about the music they are playing. Musicians should explore the many possible ways in which articulation, dynamics, and phrase shapes can be varied to create different musical meanings. This interviewee reminded us that a high-quality musical performance is always the ultimate goal – the music is more important than the notes, as evidenced by his observation that to achieve a musical effect successfully, one sometimes has to omit a note altogether. Teachers can guide students to an understanding of the effect intended by the composer, and suggest ways of producing a successful performance.

### CONCLUSION

In conclusion, interviewing a professional orchestral musician about preparation for giving premières elicited novel practice strategies that can be used to enhance traditional practice techniques. For example, he reported the use of computer and other forms of technology to solve musical problems. Most enlightening was his use of these together with scores and recordings as part of his regular practice. He emphasized the importance of understanding the language of the composer and developing aural models of the works to be performed. While not part of the original focus of this research, the interviewee discussed orchestral rehearsals as well as his individual practice. His main concerns were to anticipate the demands of the conductor and coordinate his part with others. The interview data highlight the different ways one particular expert musician practises and suggests many specific practice strategies that could be employed by musicians at all levels of expertise.

The case study reported above was designed primarily to pilot the interview schedule and procedure, but also to obtain data from one expert performer. In order to determine the extent to which musicians' practice strategies are unique to them, we are currently conducting interviews with other members of the same orchestra to identify further practice strategies reported to be both effective and efficient.

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