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Introduction

Welcome to Music 2: Orchestration and Arrangement.

By the end of this course you will have developed the practical skills and gained the theoretical knowledge required to create idiomatic and effective arrangements for a wide range of different instrumental groups. You will also have an understanding of how orchestration practices have developed over time.

Building on your learning at Level 1 (HE4), this Level 2 (HE5) course encourages you to deepen your approach to how you develop and test your skills, knowledge and understanding. This course has been designed to follow on from the OCA level 1 units Composing Music 1, Stylistic Techniques and From the Present to the Past. The course was written by experienced academics and creative practitioners in collaboration with OCA and aims for students to:

- develop an understanding of the use of instruments, individually and in combination
- learn how to adapt existing material so that it can be played successfully on different instruments
- develop an awareness of the styles of orchestration adopted by established composers through history
- develop knowledge of score notation conventions and the ability to reflect critically on their work.

The course is divided into six parts, the first five of which contain a series of projects, research tasks, exercises, and an assignment. Each part of the course covers a different type of ensemble: parts one and two cover string and wind instruments, respectively; part three covers brass instruments and instrumental choirs. Part four deals with making piano reductions and part five addresses the full orchestra. In parallel to the study of practical skills the course explores the history and theory of orchestration through research and score analysis.

You will be supported through the course by receiving formative feedback from a tutor, and at the end of your course you will be able to submit for summative assessment. Your work will be assessed on the following criteria:

Getting started

Through your study so far, you will have experienced studying with OCA and developed study skills that work for you, or you may have recently joined OCA through accreditation of prior learning or experiences. This section briefly recaps on studying at OCA through a series of quick research tasks and exercises.

As a distance learning student you receive learning materials that take you through the content of the course. Your materials provide case studies, links to resources and suggested research, and are typically structured into five parts covering a number of different topics. Each part contains research tasks, exercises, and projects that encourages you to undertake your own research, make work, and reflect on your progress. Work through one part at a time in chronological order, undertaking any tasks and documenting your work as you go in your learning log. Once you complete a given part, you will submit a selection of your work and your learning log to your tutor, who will review it and provide you with feedback.

Research task: The role of the tutor

You can find out more about the role of your tutor through watching this short video: [https://vimeo.com/180282269]

Tip: Reflecting on your feedback

It's really useful for you to reflect on this feedback in your learning log, identifying what you feel are the key themes and areas for development. This will help provide a better understanding of what you are taking from your feedback, and help you develop a reflective approach to your studies. If you are using a public facing blog, and want to quote from the feedback, please refer to ‘your tutor’ rather than by naming them personally.

Alongside providing learning materials and access to a tutor, OCA supports your learning by providing additional resources and opportunities to talk to fellow students on our discussion forums.

Research task: Accessing OCA’s student website

The OCA student site [www.oca-student.com] will be a key resource for you during your studies with OCA, so take some time to familiarise yourself with it. Log onto the OCA student website and find the video guide to using the website. Watch the video and take some notes in your learning log.
Exercise 1: What do you want / need from the course?

To help support your learning it is useful for your tutor to get a sense of your own creative background, your expectations of the course, and any other information you’d like to share. To help you think about this, consider what you want and what you might need from the course. These questions might prompt you to consider the step from Level 1 to 2, your broader motivations, approaches to learning, or general skills, knowledge and understanding of the topic. Write a short paragraph or around 5 bullet points for each question.

As an OCA music student you need to keep listening and learning logs as a way of documenting your creative responses to this course, your reflections on your progress, and as a way of sharing your work with your tutor.

A learning log should be a summary of your creative process, documenting the various stages you have gone through, with examples of your work, and a brief narrative explaining or reflecting on your creative process and outcomes. It is helpful if your learning log makes reference to each part of the course including any exercise titles or research tasks.

Some OCA students choose to keep their learning log as an online blog, a notebook or a combination of these. One advantage of using a blog is that it allows your tutor to follow your work as it develops and makes sharing your work simple, especially if you have a lot of digital elements. You may also find it is useful to have a notebook to keep with you so that you can make notes at concerts and during day to day life to type up more formally later. In addition to blogs, some students produce a series of short audio or video logs (vlogs) to record their reflections.

You may find that you start out using one method but feel you may prefer the other. Don’t worry- this is perfectly normal and all part of your learning journey; simply let your tutor know which method works best for you.

Tip: summarising your learning

Whatever form of learning log you decide to use, get into the habit of going through what you’ve produced and summarising your key learning for your tutor. See this summary as a signpost to your learning, so you’re pointing out key moments or blog posts. This will save them having to read, watch, or listen to your entire log to find out what’s been important to you. It also encourages you to be more reflective in your approach.

For further guidance see the OCA Music Guide to listening and learning logs

[https://www.oca-student.com/resource-type/study-guide/oca-music-guide-learning-and-listening-logs]
Exercise 2: Setting up your learning log

From your experience on previous OCA courses you may already have a learning log that you want to continue to use. If this is the case, make sure all of the content for this course is organised under a new menu heading so that it is completely separate from any work you did for previous courses. You cannot be assessed more than once for the same work, so it is important that each course is kept separate.

If you want to set up a new learning log as an online blog follow these steps and use the OCA blog template to help you get started:

https://www.oca-student.com/resource-type/study-guide/oca-wordpress-blog-template

If you’re not using a blog, establish how you might use folders, or a digital file as your learning log.

Throughout the course you will be asked to undertake research into the work of named creative practitioners or find other practitioners to explore. OCA will provide access to the UCA library. At Level 2 you should be in the habit of referencing any research you undertake in your learning log using the Harvard reference system, as outlined in this resource: https://www.oca-student.com/resource-type/academic-referencing

Research task: Key texts

Students may find one of the standard orchestration textbooks listed below a useful companion to the course material, though if these are unavailable there are many online sources, including Grove Music Online, which may be used instead.


While not explicitly an orchestration text, the following book on notation may also be a useful resource:


Research task: Study tips

WeAreOCA have a regular blog thread focusing on study tips and hearing from students’ experiences of studying. Visit the blog and read through some of the posts:

https://weareoca.com/category/students/study-tips/

Your course requires around 600 learning hours and can be undertaken flexibly, part-time, or full-time, depending on how quickly you want to learn. You have a maximum of two years to complete these learning hours, but if you spread your learning over too long a timeframe it’s easy to lose momentum. With this in mind, you might want to aim to complete this course
within 18 months (at 8 hours per week), 12 months (working approximately 12 hours per week), or at a full time rate of around 6 months (at 24 hours per week).

Allow around 20% of your learning hours for reflection and keeping your learning log up to date.

During the course your tutor will suggest dates by which your next assignment is due based on which of these time frames you want to work within. Deadlines can be renegotiated if needed in discussion with your tutor, so long as they fit within the overall maximum time frame for the course.

Tip: Additional support

Your tutor will discuss with you how quickly you want to work and set a suggested deadline for your first assignment during your introductory conversation. If you have difficulty with any of your deadlines, please get in touch with your tutor.

Additional support is available from the OCA Head Office in the form of Course Support, Student Services and Learner Support. You can email Course Support [coursesupport@oca.ac.uk] for answers to course content or subject related questions. Student Services [studentadvice@oca.ac.uk] if you have queries around study resources, time frames, finance and funding, or any general enquiries. Or contact Learner Support [learnersupport@oca.ac.uk] if any personal circumstances or disabilities begin to impact on your ability to study.

Allocating regular time for your studies will help you balance your course work with the rest of your life. It’s important to be realistic about what you can achieve. For example, don’t try to undertake the course full-time, while working full-time, and juggling everything else you do. You’ll end up seeing the course as ‘another thing to do’ which won’t be useful for your motivation or creativity. It’s much better to give yourself some breathing space to enjoy the challenge of your studies.
Tip: Pomodoro technique

The Pomodoro references the popular tomato-shaped food timer. Developed by Francesco Cirillo as a technique to help manage working time, the technique simply structures your focus on a task into 25 minute blocks with short breaks in-between. In other words:

1. Identify the task to be done. For example, doing a drawing or reading a text
2. Set a timer for 20-25 minutes (it doesn’t have to be a Pomodoro!)
3. Work on the task
4. When the timer goes, have a short break.
5. Then set the timer and start again

After more than four cycles, take a longer break

It can help with concentration and focus, and helps to see what can be achieved in a short period of time.

Depending on your circumstances, you might allocate time in different ways - a day a week, an hour a day, larger blocks of time such as weekends or holidays, or a combination of approaches.
Exercise 3: Managing your time

Ask yourself the following questions:

• How much time you can allocate to your studies each week?
• What is my most/least productive time of the day?
• How well do I manage time?

If your course requires around 600 hours learning, each part will require 100 learning hours.

You can subdivide these hours by the number of topics, exercises or other tasks in each part. Look at the contents page of this course to see how many there are. This should give you a rough idea of how long you need to spend on activities.

Once you have answered these questions, make a rough weekly study plan that is realistic and you can stick to, and share this plan when you introduce yourself to your tutor.

Things you will need

Through your studies so far you will have started to gather the resources you need and have developed spaces you can work in. For this course, you will need access to the following resources:

1. A computer with access to the internet.
2. Sibelius or Dorico notation software.
3. Access to: IMSLP Score Library, YouTube and Naxos Music Library (free for OCA students through the UCA Library)

Other resources which are not essential but may be useful include:

1. Spotify and/or similar music streaming and aggregation services.
2. Your local or regional library, which may have scores or CDs which are difficult to find online. The library staff may also be able to order specific scores or texts for you to use.

Tip: Student discounts on software

All students enrolled with OCA are encouraged to register for an NUS card. The card entitles you to discounts on thousands of products including software and apps. Sibelius and Dorico are both available at discounted prices to students.
Exercise 4: Building a network

Working alongside other OCA students can help provide a social support for your studies by providing fresh perspectives, feedback and encouragement. To do this you need to develop ways in which you can share your work and experiences and contribute to discussions and debates. The students you build working relationships with today may become creative collaborators in the future, so you may want to make links with other creative disciplines or talk to those at different stages of their learning journey.

You can make contact with fellow students through our OCA discussion site: [https://discuss.oca-student.com/] or talk through your email group, which you were added to when you enrolled. This email group is specific to your course. Through these groups you have access to the experience of students who are further along in their studies who can offer advice and guidance. These course discussion groups utilise ‘Google groups’ to operate. Click here for more information: [https://www.oca-student.com/content/course-discussions-feature-launched]

The OCA runs regular events at which music students have a chance to work with professional musicians on pieces they have composed or arranged, or work with fellow students to get some experience of group performance. This is a great way to consolidate the skills gained during your studies and broaden your musical horizons. Look for meetings of the New Music Collective in the OCA Study Visit Diary. [http://weareoca.com/oca-study-visits/]

Remember to communicate respectfully and responsibly with other students and OCA staff online. If you would like further information listen to this short piece on Netiquette:


Research task: OCASA

OCA’s Student Association (OCASA) [www.ocasa.org.uk] is also available to you as a student. Visit their website to see if any study visits you would like to attend.
Exercise 5: Contact your tutor

For your final exercise, get in touch with your tutor to arrange a 15-20 min conversation using Google Meet [https://meet.google.com/] (if you have the technology available) or over the phone. This is an opportunity to say hello to your tutor and put a voice to a name. It’s also a chance to discuss how best to schedule your time, document your work, and share it. The previous exercises and research tasks will have helped you prepare for this conversation and identified any questions you’d like to ask.

You may want to reflect on this conversation in your learning log as a way to identify any key points and as a starting point to refer back to later on.

You should now be ready to start Part One of your course. Don’t forget, that if you get stuck along the way there’s plenty of support available from OCA and encouragement from your fellow students.

Enjoy the rest of your studies.
Orchestration and Arrangement

Part 1: An Introduction to Orchestration

Photo: Kael Bloom
What is orchestration?

Fundamentally, orchestration is the art of realising musical forms and ideas using instruments and voices. This is distinguished from the art of composition, which is that of creating these ideas and forms in the first place.

Composition may consist of writing a melody, working out harmonies, and organising them in time. Orchestration is the process of taking this composed material and distributing it amongst instruments and parts to best communicate its distinctive qualities through musical performance. This requires a good knowledge of both music theory and the technical capabilities of different instruments.

In practice, orchestration and composition are often intimately connected. A composer may have a very specific orchestration in mind when they craft a musical idea, and an orchestrator will often be required to make fundamental creative decisions about how a piece will sound.

Orchestration is closely related to (and an important part of) arranging, the practice of taking music for one instrument or set of instruments and re-writing it for another.

In this part of the course you will learn some of the key basics of orchestration: how to write for string instruments and how to combine instrumental sounds in effective ways. This is done through four projects and an assignment. You will begin by developing your critical listening skills with regards to orchestration in project 1.1, moving on to study string instruments and their capabilities in project 1.2. Project 1.3 deals with the way chords and lines interact, and how to use them to create different effects. You will then go on to apply what you’ve learned in completing and crafting arrangements for different-sized groups of string instruments in project 1.4 and assignment 1.

Tip: Keeping a Glossary

Throughout the course you will be introduced to new words and concepts. It may be useful to keep a glossary and record any unfamiliar terms or ideas alongside their definitions. You can add new words and definitions as you encounter them.
Project 1.1: Listening to Orchestration

The way music is orchestrated has a huge effect on the way that we perceive fundamental qualities such as melody, harmony, texture, phrasing and form. If you have completed the level one courses Composing Music 1, From the Present to the Past and Stylistic Techniques you will have studied all of these areas individually. If you haven’t, or if you are unfamiliar with any of them, it might be worth doing a little research to clarify their definitions before continuing.

Exercise 1: Getting a Sense of the Possibilities

Listen to at least one piece from each of the three groups below. While listening, make notes on how the instruments are being used and how this contributes to the overall sound and character of the piece. Record your notes, and any other observations, in your listening log.

Claude Vivier: Lonely Child (1980)
György Ligeti: Atmosphères (1977)
Giacinto Scelsi: Anahit (1965)
Unsuk Chin: Akrostichon Wortspiel (1991-3)
Steve Reich: Music for Mallet Instruments, Voices and Organ (1974-6)
Arvo Pärt: Cantus in Memorian Benjamin Britten (1977)
Howard Skempton: Lento (1990)
Philip Glass: Spaceship from Einstein on the Beach (1975)
Richard Wagner: Parsifal, Act 1 Prelude (1874)
Gustav Mahler: Das Lied von der Erde: Abschied (1909)
Claude Debussy: Prélude à l’après-midi d’un faune (1894)
Maurice Ravel: Piano Concerto in G major, Second Movement (1929-31)

Research Point 1A: Pictures at an Exhibition

Listen to Modest Mussorgsky’s piano piece Pictures at an Exhibition (1874). Now listen to Maurice Ravel’s orchestrated version (1922). Placing these two works side-by-side is a powerful example of the huge potential of orchestration to expand, deepen and support an existing musical structure.

Consider the second movement - Gnomus - in more detail. Use the scores for the piano and orchestral versions to compare Ravel’s arrangement to the original. Does anything surprise you about Ravel’s choices? Has he made any obvious changes to the music when orchestrating it? Record your findings in your learning log.

The scores can be found on IMSLP, or in your local music library.
Project 1.2: Introduction to String Instruments

String instruments are in many ways the core of Western instrumental tradition, alongside the keyboards. They are the heart of the orchestra, and are widely used in both solo and chamber music. They are also very versatile instruments, able to utilise a wide range of techniques to create a broad palette of different sounds.

Understanding how instruments work, and how to write for them in a way which sounds effective and makes sense to the player is a skill essential to good orchestration. In this section of the course we will study the orchestral string instruments: the violin, viola, cello and double bass.

Research Point 1B: Orchestral String Instruments

Use your chosen orchestration reference and your own research to create a reference sheet for each of the orchestral string instruments. Include basic information such as the range of the different instruments and the pitches of the open strings, as well as different techniques and how they work. This should be something you can refer back to as you work through the course.

For an example of how this might look see the “Classical Guitar Quick Reference Sheet” in the course folder.

Extended techniques for strings

The term extended techniques covers any techniques or ways of using an instrument in a way outside of conventional, classical technique. However, many of these techniques are now standard and familiar across a range of musical styles, and have been in use for centuries, so the name is a little misleading. Often these techniques would have been used by instrumental virtuosoi as dazzling technical displays, and have gradually become integrated into standard practice. For example, Paganini’s use of harmonics and left-hand pizzicato were considered revolutionary in his time, but are now widely used by composers and performers.

You may not find all of these techniques listed in older or more basic orchestration manuals, so a summary of the most common and versatile string extended techniques is presented in Appendix 1. These techniques can all be applied to violin, viola, cello and double bass.
Exercise 2: Aroura

To get a sense of how these techniques can expand the palette of conventional string sounds, listen to Aroura by Iannis Xenakis, following the score if possible. Using Appendix 1 for reference make a list of techniques that you can hear in the piece. Record this, and any other observations about string technique or orchestration, in your learning log.

Tip

Notation is often presented as a fixed set of rules, but in truth it is, like language, constantly in flux, evolving and being added to.

Through their very nature as “extended”, there are not always universally agreed notations for these techniques. A selection of notation examples are presented in Appendix 1, but you should always define your notation in words as well, and if necessary include a glossary or list of notations at the beginning of the score. Likewise, if you have trouble realising a notation using Sibelius or Dorico, a good written explanation can be used instead, as long as what you write can be understood from first principles.

For further reference on notating extended techniques, and any other queries on advanced notation, the book Behind Bars by Elaine Gould is a comprehensive survey of modern notation practice.

Extract 1: A glossary from a piece for string quartet.

: Mute indicated string with left hand to create a mostly unpitched sound. The position of the hand on the string will be dictated by the context of the technique, but care should be taken to maximize the difference between the sound of the different strings.

: Col legno bow tap.

: Harmonic glissando on indicated string in indicated direction.

: Extreme bow pressure.

: Allow the bow to bounce on the string (jeté) - the number of stems is not an exact notation, but density should be roughly observed.
**Exercise 3: Transcription for Solo Strings**

Choose two songs for solo voice, and transcribe each one for a different solo string instrument, choosing from violin, viola, cello or double bass. Use at least one of the extended techniques listed in Appendix 1 in each piece. Be careful to write appropriately for the instrument: consider how the player will perform the piece and what they will physically have to do to realise the notation. Music which is well-written for a given instrument is said to be written idiomatically.

If the song has an accompaniment, you may want to incorporate this into your transcription, but you must do this without using additional instruments.

Aim to write between 1-3 minutes. You may want to adapt a verse or an extract from a longer piece.

**Tip: Copyright**

When choosing music to arrange it is vital to have a good understanding of copyright and intellectual property law. In the UK, a work is in the public domain (meaning that anyone can use, change, or reproduce it) 70 years from the end of the calendar year in which the last remaining author of the work dies. For example, at the start of 2018, all of the works created by authors who died in 1947 entered the public domain. Prior to this point, all work is within copyright, and the rights remain with either the author or their estate.

Within the context of education you are free to arrange (and perform) any work, even if it is within copyright, provided that:

- you do not perform the work outside of an educational context
- no-one is paying to see the performance
- you are not being paid
- you do not publish the work or make it publicly available (including on a blog!)

This means that for this course, you may arrange any songs or pieces you like, as long as you do not do any of the above things with your finished arrangements.

If you want to do any of these things, you must use material which is in the public domain, or which you have received permission from the rights-holder to use, in which case you will usually have to pay a fee.

The OCA takes no responsibility for any student copyright violations. It is your responsibility to ensure the legality of your work, and remember that copyright law will vary in different countries. To help you in doing this, it is important to use the Harvard reference system to acknowledge any scores or performances you refer to. For example, in the case of musical scores identifying:
Composer surname, Initials., Year. *Title of score*. Notes. Place of publication: publisher.

For example:


Or in the case of sound recording:

Name, Initials(s) (of originator/composer), Year. *Title*. [medium] Name of recording artist/performer/conductor. Place of distribution: Record Label.

For example:


For more details on using Harvard referencing please use UCA’s online guide:

https://www.uca.ac.uk/library/academic-support/harvard-referencing/
Project 1.3: Leading Voices, Spacing Chords

In this project you will study some of the theoretical underpinnings of good orchestration. You’ll cover how to space and order chords to achieve different effects, and learn why certain chords sound the way they do. Later you’ll combine this knowledge with the practical understanding of instruments you gained in project 2 to create effective arrangements for string ensembles.

The Harmonic Series:

Sound, and therefore music, fundamentally consists of vibrations. The distinctive sounds of different instruments arise from how they cause the the air around them to vibrate, whether it comes from an air column within a tube (for example, in a wind instrument such as the flute), or a vibrating string (for example, on a cello or piano). While we may not necessarily think of it in these terms, when we combine instruments in orchestration we take into account how they cause vibration individually and how these individual vibrations interact to create different colours and textures.

Pitched instruments create vibrations based on something called the overtone series, or harmonic series. Put simply, any given note played on an instrument actually contains several different pitches, or frequencies, which combine to create the tone-colour of the sound. For example, an oboe and a violin both playing the same pitch will sound different: this is because different overtones are stronger in each sound.

The figure below shows the pitches which make up the harmonic series of a low C - these are called harmonics. For a low D, all of these pitches would be a tone higher, but the interval relationship always remains the same. Differences in timbre arise from different harmonics being louder or softer: a sound with strong low harmonics will sound warm or full, a sound with high strong harmonics will sound thinner and more piercing.

The lowest pitch - in this case C - is called the fundamental. The harmonics are numbered in the figure, and continue beyond the 16 harmonics shown here, though they are increasingly hard to discern with the naked ear.

You can see that the lower harmonics make a C major chord. Generally speaking, sounds which approximate the overtone series, such as a major chord, sound consonant or harmonious, and sounds which are very different to the overtone series, such as a cluster chord, sound dissonant. The same chord can sound very differently depending on whether it is voiced with or against the harmonic series.
You will have noticed the accidentals in front of the B, F and A in the figure have arrows attached to them. This is because these notes are noticeably 'out of tune' with the tempered tuning associated with the piano, say. However, to put it another way, tempered tuning is in fact out of tune with the natural resonance of the overtone series.

So, how does the overtone series relate to the waveform of a particular instrument's sound? Essentially the instrument's sound, or timbre, is a superimposition of many simple waveforms of different frequencies interacting in a complex way. We won't go too far into this but we can take a look at some of the waveforms in the following figure.

This figure shows the waveforms for the first three harmonics of the overtone series - in our example the low C, the C one octave higher, and the G above that. You can imagine the line as a vibrating string, fixed at both ends. The different vibrations the string is capable of producing correspond to the different overtones.

As you can see, there is a clear relationship between the three waveforms: the second harmonic has a wavelength half of that of the first, so is in a relationship of 2:1 with it. The third harmonic has a wavelength one third as long as the first, so they are in a 3:1 relationship. The relationship between the third harmonic and the second harmonic is 3:2. These ratios and relationships have important roles in many different areas of music including harmony, melody, timbre and, importantly for us, orchestration.

The study of sound and its properties, such as those explored here, is called acoustics. This is an enticing topic that you may wish to investigate in your own time, but for the moment we can focus on matters of practical orchestration and how this is generally achieved, while being aware of the hidden activity lying behind it.

We will encounter the overtone series again later in the course, but for now it is enough to have this in the background as we move on to the next area of study.
Tip: Nodes

A node is the name given to a point of zero amplitude on a waveform - in the figure above the points where the string meets the dotted line. Nodes are key to the production of sound in instruments.

Exercise 4: Listening to the Harmonic Series

We can try to hear for ourselves the 'out of tune' nature of the seventh harmonic - the 'B flat', and the eleventh harmonic - the 'F sharp' - at a piano, so, when you have one near try this out: Play the low C loudly (a ff dynamic ought to do it, and do not use any of the piano pedals) and listen 'inside' the note. Try to hear each overtone by working your way up, the octave - C, the fifth - G, and so on. You're aiming to hear the E above middle C, then the G above that and then the 'B flat'. Now play the note B flat on the piano - hear how this creates a 'wobble', technically known as 'beats' with the corresponding overtone?

Keep going with climbing the overtone ladder and see if you can hear the ‘F sharp’ - then play the F sharp of the piano to hear some more wobbling. Have you managed to hear these overtones? It can take a bit of practice as we are so used to hearing the low C in its entirety but those inner sounds are there.

To help direct the ear, you can pick out the corresponding notes on the piano as you practice but over time the ability to hear the constituent overtones of 'notes' should become easier.

The overtones of a low C may be heard on any instrument with that note in its range, though the beating is most easily achieved on instruments with fixed tuning such as the piano or harp, as well as having the capability to play more than one note at once. With non-fixed tuning instruments such as string instruments, or voices, there can be a natural tendency to gravitate towards tuning connected to the overtone series such that when performing with a piano there is a need to adjust to fit with its tempered tuning.

Exercise 5: Chords and the Harmonic Series

To get a sense of how the harmonic series affects the sounds we hear, and how it may affect our orchestration choices, experiment with playing chords at the piano (use Sibelius or Dorico if you don't have access to a keyboard). Try out different spacings (voicings) of major and dominant seventh chords - see what the same chord sounds like when the spacing approximates the harmonic series, and when it is very different from it. Record your aural experiments in your listening log.
Voice-leading

When expanding a short score or piano score, or transcribing from one instrument type to another, orchestrators will often have to change the voicing or spacing of chords to sit comfortably in a given ensemble. An arranger working from a jazz chart or lead sheet may have to voice and orchestrate chords from scratch.

The art of voicing chords, and fitting them into instrumental or vocal parts, is known as voice-leading.

There are some simple rules of thumb which, if followed, make this process relatively straightforward, and give the orchestrator control over the end-result, even when making significant changes to register or voicing.

To make a passage sound smooth and continuous:

- Have the upper parts moving by step, or by small intervals, as much as possible (the bass may move by leap). Semitone movement works particularly well.
- Resolve dissonances by step.
- Move the top and bottom parts in contrary motion (though this won’t always be possible).
- Try to fit the chord as closely as you can to the harmonic series.

If you’ve completed *Music 1: Stylistic Techniques* some of these principles may be familiar from your study of Species Counterpoint. However in this context these are not rules which must be followed; instead they are tools which allow the orchestrator to control the sound. If you want a chord progression to support a melody without distracting from it, or sit securely with a texture, obeying these principles is a good way to do it.

You can see an example of this below:

(synthesised recordings of all these examples can be found in the course folder)

Example 1
On the other hand, this chord sequence is fairly bland and characterless! Going against one or more of these principles allows you to create discontinuity, emphasis and structural division, and draw attention to specific moments. The examples below break these rules to achieve specific effects.

In this second example, all of the upper parts move by leap onto the A7 chord, drawing attention to the passing modulation into D-minor, and giving the chord sequence a strong sense of progression from C-major to D-minor and back.

Example 2

In the third example, the parts move mostly in parallel motion, and the chords are full of complex and unresolved dissonances. This progression is going to dominate any texture in which it is used, and may well overpower any melody it is supposed to accompany. Used well, however, it could be extremely effective.

Example 3
Exercise 6: Arranging Chords

Arrange the following chord sequences for a string quartet (2 violins, viola, cello). Use the principles above to re-space the harmonies so that they move smoothly from one chord to another, and make sure to write idiomatically for the quartet. Use both root and first-position chords. Write in regular minims so that the focus is entirely on the chords and their relationship to each other.

Once you are comfortable with this process, experiment with breaking the rules to create drama and discontinuity. Re-write the sequences above to give each sequence a clear dramatic structure, breaking the rules to add interest and contrast to the music.

Include both versions of the exercise in your learning log, and write a short commentary on your process.

Tip: Enharmonics

Chromatic pitches can be written in multiple ways, for example the C-flat in the third chord sequence above could also be written as a B, but doing so would make the 7th chord less obvious to the reader. When making arrangements, you will have to decide how to “spell” pitches, that is, what scale degree and what accidental to use. Most of the time there will be an obvious choice, but it can sometimes be more ambiguous. For example you may have to choose between showing a melodic contour or being clear about a harmony. In each case, think carefully about what the options are and choose the best compromise. Keep an eye out for how other arrangers have dealt with these issues during your studies, and apply your research to your own work.
Project 1.4: Orchestrating with String Instruments

In this project you will consolidate the skills and knowledge gained over the course of the unit so far, and apply them in the completion of your own arrangements for string ensembles.

Research Point 1C: Structure and Orchestration

Listen to the version of Fauré's Pavane in F-sharp minor, Op. 50 for orchestra and chorus – this piece is an excellent example of how orchestration can be used to structure a work. There are essentially only two types of material in the work, but through creative orchestration this material has been balanced and arranged into a clear but interesting form. Now listen to the original piano composition, as you did with the Mussorgsky/Ravel earlier in the course – note how Fauré has taken the opportunity to add contrast within his orchestration which is unavailable on the piano.

As you listen, make a chart or diagram showing the form of the work, based on what instrumental sounds are being used. How does the orchestration relate to the structure of the work, and the melodic material? Record your answers, and the diagram, in your learning log.

String Orchestras:

The difference between orchestral writing and chamber music is that each line of music in an orchestra is usually played by multiple musicians. In the context of a string orchestra the higher instruments are often played by larger groups, to achieve a balanced sound. For example 8 first violins, 6 seconds, 4 violas, 2 cellos and a double bass. You may want to specify exact numbers of players, or leave it undefined.

Composers and arrangers may choose to split these sections into smaller groups - this is known as divisi playing. Divisi into two or three parts is normal in orchestral writing, though even greater separations are possible. Depending on the complexity of the music, divisi passages may be written as two parts on one staff (see example below) or with multiple staves. The start of a divisi passage should be marked div. a 2 (for divisi into two parts), and the end marked tutti, meaning all the players play together.

It is also possible to have a single player from each section play - this should be marked solo, again followed by tutti.

Example 4
Exercise 7: Completing String Arrangements

In this exercise, you will apply your work on voice-leading and string instruments in completing short arrangements for different sizes of string ensemble.

A piano extract is provided, along with the first few bars of a string arrangement. Complete the arrangements, following the style of the given opening. Each extract contains some problems which you must approach creatively to solve.

When arranging the music, consider the results of your chord-spacing experiments in Project 3. You can use the same processes you applied there to shape and control the musical progressions in your arrangements.

Extract 1 - Debussy: Clair de lune (adapted)
Extract 2 - Bartok: From the Diary of a Fly (adapted)
Extract 3 - Ravel:
Valses nobles et sentimentales (no. 1) (adapted)
Given Openings:

1. For string quartet:

![Musical notation for string quartet with annotations]

2. For two violins:

![Musical notation for two violins with annotations]

**Allegro** \( \frac{3}{4} \) = 146

- bow taps (col legno)
- arco molto sul pont.
- sim.
- molto sul pont.
- bow taps (col legno)
- (arco m.s.p)
3. For string octet:

```
Modéré, très franc \( \text{\textit{j} = 176} \)

\begin{align*}
\text{Violin 1} & : & \text{\textit{f}} & \text{\textit{f}} & \text{\textit{f}} & \text{\textit{f}} & \text{\textit{f}} & \text{\textit{f}} \\
\text{Violin 2} & : & \text{\textit{pizz.}} & \text{\textit{pizz.}} & \text{\textit{pizz.}} & \text{\textit{pizz.}} & \text{\textit{pizz.}} & \text{\textit{pizz.}} \\
\text{Violin 3} & : & \text{\textit{arco}} & \text{\textit{arco}} & \text{\textit{arco}} & \text{\textit{arco}} & \text{\textit{arco}} & \text{\textit{arco}} \\
\text{Viola 1} & : & \text{\textit{pizz.}} & \text{\textit{pizz.}} & \text{\textit{pizz.}} & \text{\textit{pizz.}} & \text{\textit{pizz.}} & \text{\textit{pizz.}} \\
\text{Viola 2} & : & \text{\textit{arco}} & \text{\textit{arco}} & \text{\textit{arco}} & \text{\textit{arco}} & \text{\textit{arco}} & \text{\textit{arco}} \\
\text{Violoncello} & : & \text{\textit{f}} & \text{\textit{f}} & \text{\textit{f}} & \text{\textit{f}} & \text{\textit{f}} & \text{\textit{f}} \\
\text{Double Bass} & : & \text{\textit{f}} & \text{\textit{f}} & \text{\textit{f}} & \text{\textit{f}} & \text{\textit{f}} & \text{\textit{f}}
\end{align*}
```
Assignment 1: Arranging for String Orchestra

This assignment should take you about 4-5 hours, though once complete, you may want to review and revise your arrangement in response to the feedback you receive.

Part 1: Preparation

Choose a traditional or classical song, instrumental piece or jazz tune, 2-4 minutes long, with both a melody and either a written accompaniment or chord chart. If you choose an instrumental piece, it should not be for a string instrument.

Make a structural diagram of the work, as you did in Research Point 1C, marking regular phrases, transitions between sections, different material types, and anything else which contributes to the character of the piece.

Part 2: Realisation

Make a string orchestra arrangement of the piece you chose for part one. Using your structural plan as a starting point, use your orchestration choices to show and support the structure and direction of the music – or if there isn't a clear direction, create one.

You can do this using register, technique, density, dynamic, and any other parameters you like. You may want to include secondary string instruments such as the harp or guitar, but be careful to write appropriately for them.

Part 3: Reflection

Write a short commentary on your process, considering the following questions:

- How successful do you feel your arrangement is?
- How well do you think you have used the instrumental resources available to you?
- How useful was the structural analysis in completing the arrangement?

Include the original version of the piece with your submission.