A VOYAGE OF MUSICAL DISCOVERY

AUSTRALIAN ROMANTIC & CLASSICAL ORCHESTRA

RICHARD GILL AO | FOUNDING ARTISTIC DIRECTOR

Education Kit #3 2021
TEXTURE & TIMBRE

About

The *Voyage of Musical Discovery* Education Kit is aligned with the **Music 2 and Music Extension – Stage 6** NSW HSC Music Syllabus. The material below is a stand-alone learning resource, but full educational benefit is achieved by working through the activities in conjunction with attending the live *Voyage* presentation on **Thursday 5 August 2021, 6.30pm** at City Recital Hall, Sydney.

Voyage of Musical Discovery is presented in two parts – orchestral and chamber music from the Classical or Romantic era performed in historically-informed style followed by Australian works written in the past 25 years performed by guest contemporary ensembles, improvisers, singer songwriters or a capella voices.

Voyage establishes and demonstrates the many connections and links between the musics of different times, places and styles, and augmented by the Education Kit, listeners are given the information and tools to compose and create sounds and pieces of their own.

Voyage #3 looks at the individual **timbral** qualities of instruments, and with a focus on percussion, investigates how different sound colours are highlighted to form orchestrational **textures**.

Australian Romantic & Classical Orchestra arco.org.au

HAYDN Symphony No.103 in E-flat major *Drum Roll* (1795)

In his second-last symphony, Joseph Haydn (1732–1809) not only manages to sum up an entire life of composing, but looks to the future. He paves the way for an expansion of the symphonic form – as taken up by Beethoven, Brahms then Mahler – and from the very first bars signals a dramatic shift in the sound of the orchestra.

Taikoz taikoz.com

KERRYN JOYCE & **RYUJI HAMADA** *Flowing Water* (2019)
IAN CLEWORTH *...like a ripple…* (2012)

Since the time of Haydn, percussion instruments have taken on more prominent roles in the ensemble, primarily due to their timbral versatility. Taikoz – Australia's award-winning taiko drum ensemble – showcases new Australian compositions that are entirely built around the dynamic range, explosive energy, and huge expressive capabilities of percussion.

Voyage of Musical Discovery
booking information

Texture & Timbre

Timbre – the individual colour or character of the sound of an instrument or voice, independent of its pitch or volume.

Texture – the density or thickness created by combining the individual instrumental colours in melodic, harmonic, and rhythmic layers. Texture is a broad term that applies in some way to every discussion about the ways the many musical elements interact.

For detailed information, examples and exercises about the interplay and development of melodic, harmonic and rhythmic motifs to create larger horizontal textures – refer to the **Motivic Development** Education Kit accompanying Voyage #1 from February 2021.

Examples and exercises relating to the textures created by the different vertical layering of parts – from homophony, polyphony, heterophony and beyond – can be found in the **Voices & Instruments** Education Kit accompanying Voyage #2 from May 2021.

In the following are explanations, examples and exercises for understanding:
- sound colour and the timbral features of sounds
- the role of percussion in the context of timbral contrast
- how interpretational freedoms influence texture

Timbre

Timbre belongs to the field of psychoacoustics, a branch of psychology that deals with our perception of sound and its effects.

Being originally a French word, we give the second syllable a more French pronunciation than in English: timbre rhymes with amber. Even earlier, the word came from the mediaeval Greek word *timbanon*, meaning drum.

1. Does Sound Have A Colour?

You may have heard of **white noise** – an ingredient in electronic music for synthesising snare drums or cymbals, and is also the static of a mistuned or empty radio station. And if you have been in a venue when the PA is being checked, you will have likely heard **pink noise** being sent through each speaker to test the response across all frequencies.

Yet, the words we choose to describe the timbral qualities of individual instruments are more often approximations or comparisons, and each person will hear instruments and sounds from their own perspective and informed by their own experiences.

As a musician or composer, it is important that you learn to hear and identify the distinguishing tonal features of instruments. The following two activities give you practice at doing this. Identify and describe what you hear with whatever system best suits you or the sound – it is not necessary to adopt musical or scientific terminology.

Identifying Sound Colour

Stand or sit with your eyes closed. Put a timer on for three minutes, and focus your attention on just what you hear, no matter how soft or distant.

As a group, make a quick list of all sound events that occurred over the three minutes:
e.g., *air conditioner breathing distant traffic birds a slammed door*

Silence can be quite a noisy place, as John Cage (1912–92) demonstrated in many of his compositions – including the famous 4'33", where the ambience and accidental sounds of the audience form almost the entire work.

Colour Words

Come up with some words to describe the following sounds:

- bass clarinet
- kazoo
- triangle
- foghorn
- rain

invent new descriptive words

Chromesthesia

Chromesthesia is a type of synaesthesia – a linking of different sensory pathways – where some people associate a specific colour with a sound or musical note. Well-known musicians who have reported experiencing this phenomenon include Liszt, Sibelius, Rimsky-Korsakov, Scriabin, Duke Ellington, Olivier Messiaen, Itzhak Perlman, Billy Joel and Aphex Twin.

2. EQ

Although the defining timbre of an instrument remains consistent and recognisable in different contexts or situations, there are still many ways of altering aspects of the sound quality of individual instruments. Some obvious examples include adding effects pedals to an electric guitar, or having trumpets play with harmon mutes. A good way to think of these shifts in tone is to compare them to the EQ (equalisation) settings on an amplifier or music app – alterations to the level and prominence of low, middle and high frequencies in the sound.

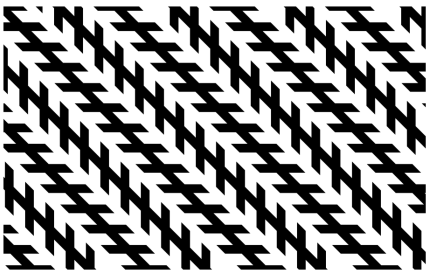
Even without this technology, at the very opening of Symphony No. 103, Haydn engineers a fundamental timbral change to the familiar colours of the Classical-era orchestra. That the symphony begins with a solo timpani roll is radical enough, but it is what happens next that completes the picture.

First of all, listen to the opening (listen until 0:42)

Context

Notice how the bass instruments – bassoon, cello and double bass – emerge from the timbre of the timpani. If the work had begun with the low instruments not being preceded by the timpani, our perception of their sound colour would have been different. Context is everything when analysing and choosing sound colour – timbre can appear to change depending on its surroundings. Think of it as the aural equivalent of one of those optical illusions where the lines are parallel but look bent or distorted due to the background patterns.

What we hear is more than timpani followed by low strings and bassoon – the overlap of contrasting sounds in the acoustic adds a new colour to the mix. This is the key to understanding texture and timbre in music – unusual and innovative combinations of sounds lead to new and interesting results.



Zöllner Illusion

Optical illusion created by German astrophysicist Johann Karl Friedrich Zöllner (1834–82)

As the music progresses the effect from the opening may fade, but it doesn't completely wear off. At the end of the movement, Haydn repeats the process except this time the context has changed again.

Listen to how it occurs the second time (listen until 9:26)

To Discuss

What are some of the textures that precede the second timpani roll in the above excerpt? *Go beyond identifying instruments; aim to describe textural effects*

What happens immediately before the roll?

Does the timbral illusion still exist the second time?

3. Role of Percussion

Haydn's writing for the timpani is bold and orchestrationally effective. However, it still belongs to a musical period when percussion rarely went beyond providing rhythmic support or adding ornamental flourishes to string- and wind-dominated ensemble textures. It took until the 20th century for percussion instruments to outgrow this role, and one of the composers to lead the change was Edgard Varèse (1883–1965). His motivation for increasing the prominence of percussion was to explore timbral potential in music – in particular to find instruments able to produce clear sounds in the extremes of range and dynamic. One of his works where this is beautifully demonstrated is *Ionisation* for 13 percussionists, written between 1929–31. In his New York apartment studio, Varèse had a large collection of percussion instruments from all corners of the globe, and his curiosity for discovering new sound colours extended to including pre-recorded sounds, analogue electronics, and speaker arrays in performance.

Taiko

Parallel to these developments in Europe and the United States, the percussion instruments of Japan were also taking on new roles. Ian Cleworth, artistic director of Taikoz, explains that two key terms are **taiko** and **wadaiko** – the first refers to the drum itself, and the second encapsulates the broader art of Japanese drumming. Traditionally, taiko were heard as part of religious ceremonies, to accompany community theatre and the collective retelling of stories, regal events, to usher in the seasons, and to commemorate births and deaths. In these situations, there were usually just one or two drums playing a single or double instrumental line.

In the 1950s, the taiko emerged as a musical voice in its own right – due in part to jazz drummer Daihachi Ōguchi (1924–2008) arranging different sizes and types of taiko in a set up reminiscent of the Western drum kit. This opened the door to combining multiple timbres and pitches in a drum ensemble, and led to the rapid growth of the mixed drum ensemble as the entity we know today. There are now thousands of such groups around the world performing in this way. Taikoz developed from a collaboration in 1997 between Ian Cleworth (taiko) and Riley Lee (shakuhachi), and is now a leading force in music and theatre performance, touring, commissioning and education.

(Taikoz information is from *Wadaiko: A Handbook* by Ian Cleworth, 2014.)

Introduce yourself to some of the different sized drums by watching the following short excerpt of ...*like a ripple*... performed live by Taikoz. Note the clarity of the instruments' timbre at soft dynamics, and how each individual part is audible even when the texture is thick.

...like a ripple... excerpt

4. Contrast & Difference

While the late-Romantic orchestras of Strauss and Mahler are larger and texturally lush and varied, they still grew from a Classical-era tradition of establishing homogeneity and blend in the sound as a whole. This has led to a text-book approach to orchestration still often taught today where each instrumental family is introduced according to its proximity to the conductor's podium – upper then lower strings, winds, brasses, percussion, then perhaps a final section on electronics or non-Western instruments. The danger with this approach for the composer is that the further down the list the instruments are, the more these tend to be treated as exotic effects or colouring devices.

All instruments are colour instruments – each and every one has a unique and special sound, and your job as a composer is to find ways to extract the colour from them, not add colour to them. Whatever your palette of sounds is, look for methods to amplify, disguise, and enliven one sound with another – as Haydn does with the timpani and the low strings and bassoon. When mastered, this technique can become the core of your compositional art – the motifs, themes, harmonies, rhythms and vertical textures all expand outwards from creating and exploring timbral contrast and difference.

Three Steps for Creating Sound Colour

1. Get to know the particularities of each instrument and what it can do, by asking the following questions:

- how is a note articulated?
- how long can different notes be held?
- what is the dynamic span?
- how does the timbre change between low and high, and loud and soft?

2. Get to know the idiosyncrasies and expertise of individual players by asking the following questions:

- what do you do best?
- what is it that makes you love your instrument?
- what music do you listen to?
- who or what instruments do you prefer to play with and why?

3. Conduct your own experiments with instruments you have access to

Have three different instruments play the same pitch at the same time and at a similar volume. Then by making changes to the timing of entries, dynamics, or pitches and octaves – discover ways to:

- conceal one sound with another
- boost or emphasise one sound with another
- alter the colour of a long sound with short sounds
- add distortion or noise elements, such as breaths, wobbles, scrapes

Think of these techniques like photography filters apps – done well, your original image can be enhanced by highlighting different shades, shadows or artefacts.

Soundscape

For listeners in Haydn's day, the prospect of a chamber ensemble consisting of only percussion instruments would have been unthinkable. Yet, progress in music – as in society – often requires a change in thinking. Even today, it can still be a challenge to move beyond giving instruments traditional roles. A good experiment for altering your thinking about what instruments are capable of, is to look at and listen to everyday objects.

Every object has a sound – split up and quickly locate a sound-making object in the room. Something you can scrape, hit, shake, tap, squeeze or blow through.

Where possible, decide whether your found object has:

- short or long sustain
- low, medium or high pitch
- mellow or bright timbre

Figure out a simple repeating pattern that best represents the timbral qualities of your new instrument.

As a group, create a soundscape that successively introduces each sound. You could go around the room clockwise, with each sound entering and continuing one after another. Or, appoint someone to switch the different sounds on and off with hand signals

There does not necessarily need to be a unifying groove or rhythmic sense – the point is to observe how the different timbres overlap, and what textures emerge. Bring what you discover back to the instruments themselves, of course ensuring that they are not maltreated or damaged in the process!

To get some ideas about how to create sounds with non-traditional instruments, have a look at these clips:

Anita Gritsch – Body Noster

Music for One Apartment and Six Drummers

Klangfarbenmelodie

A German term that means *sound-colour melody*. A compositional technique dating from the early-20th century where a melodic line is divided between different instruments to emphasise textural and timbral shifts in the sound.

5. Individual Personalities

An overlooked aspect of composition is that of the personalities of players, even though history is full of stories of composers writing for specific people rather than instruments. Consider the many anecdotes surrounding Mozart's works for his friend Anton Stadler. When listening to the Clarinet Concerto or Clarinet Quintet, it is almost impossible not to imagine some of the conversations, adventures and even misunderstandings that lie in the cracks between the notes that have survived on paper. Similarly, the Duke Ellington band was so well routined as a group of personalities, that the parts generally had the players' names on them rather than their instruments.

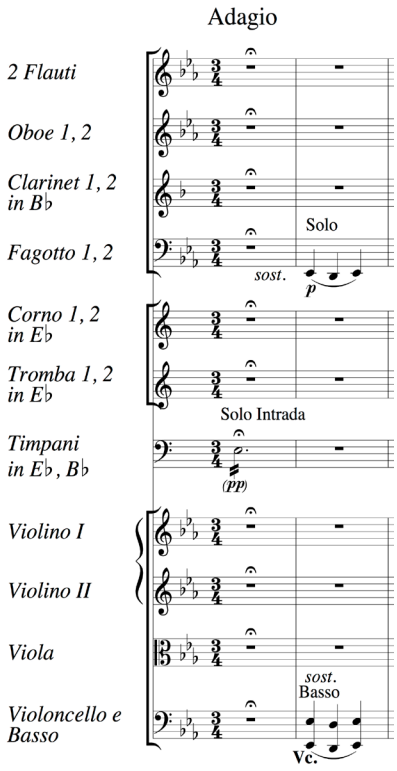
Writing for people brings in layers of inside information and trust. If you know what a player is capable of, and they also understand what makes you tick – you can write in a way that gives a player more responsibility in a work. This means that you can trust them to fill in some of the blanks, and to read between the lines. Leaving some things open is a way of harnessing the many little decisions that musicians instinctively make – how long to hold a note, how much vibrato to add and when, when or if to get louder or softer, what type of articulation or phrasing, altering rhythms, and elaborating on phrases. These are some of the improvised components that make up music – they were central to the music of Mozart and Haydn, and they increasingly appear in the 21st-century contemporary classical art music composer's toolbox.

How does this affect texture and timbre?

Across all styles and times, these individualities open a work up to the possibility for new and spontaneous textures and timbres to emerge.

Example 1: Drum Roll Symphony

Look at that first bar – the exact duration of the roll is not stipulated, and the dynamic in brackets is an editorial suggestion added later by a publisher. In a traditional orchestral environment, the decisions about how to play this opening would be the responsibility of the conductor – they would likely cue any changes to the dynamic and indicate when bar 2 begins. But even in an historically-informed chamber ensemble without conductor, an experienced timpanist is not going to suddenly start playing a samba rhythm – they know the stylistic conventions, and would make their musical decisions accordingly.



Compare some different interpretations of this famous opening passage:

Mackerras 1991

Abbado 1996

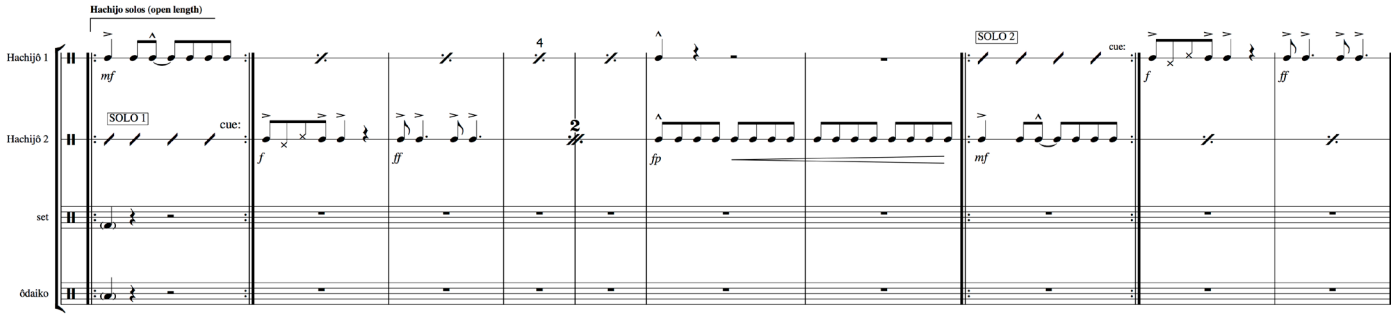
Brüggen 1987

Harnoncourt 1987

Dorati 1959

Example 2: *...like a ripple...*

Throughout *...like a ripple...*, the players of Taikoz work together to create a unified structure built up from overlapping and interlocking rhythmic cells. Often these develop and grow by way of an incremental series of improvised decisions – as in the example below. These improvised sections cause subtle changes to the rhythmic texture – the players will base their solos on the preceding and surrounding rhythmic material, and cues as to when the form progresses are clearly indicated.



link to full score

Example 3: Flowing Water

Flowing Water is a structured improvisation that is not notated in a traditional score.

Listen to a performance of the work

The work was developed through rehearsals and discussions, and finessed in performances. The melody on the **shinobue** – Japanese traverse flute – began with Ryuji Hamada improvising responses to the rhythms and harmonies played by Kerryn Joyce on the **hang** – a recently-developed type of drum made of steel. Over time the melody has remained, and you can hear a similar version of it appear again towards the end. The group has decided on the order that the instruments enter and exit, and the remaining two players – Ian Cleworth on **kanade-okedo** and Sophia Ang on **percussion** – let their rhythmic ideas unfold gently, supported by making subtle changes to the sound colours of the instruments. What stands out in the work is that each instrument has a clearly-defined timbre, and this allows us to easily follow the separate voices in the texture.

The approach bears some similarities to that of Australian improvising trio The Necks – Chris Abrahams (piano), Lloyd Swanton (bass), and Tony Buck (drums). A typical piece of theirs lasts an hour and is made up of autonomous repeating concentric circles that unfold and overlap to form one continuous improvised composition. Lloyd Swanton explains that the template or parameters are never prescriptive; the only convention they have adhered to since playing together for over thirty years, is that a piece always begins with one player.

(from 'The Necks – in Conversation', workshop performance at The Melbourne International Jazz Festival. Melbourne Recital Centre, 6 March 2016.)

Mobile

American composer Earle Brown (1926–2002) wrote a series of works in the 1950s inspired by the sculptures of Alexander Calder (1898–1976). Looking at Calder's slowly revolving mobiles that often filled an entire room, Brown wrote graphically-scored pieces to emulate the sensation of a work moving and catching the light in different ways each time you viewed it, yet were still the same object.

Play Area

Start with a blank sheet of paper, a pencil or black marker, and a ruler.

Design a single-page score that consists only of horizontal and vertical lines of varying thicknesses and lengths. No lines should touch, cross or interlock.

When you are happy with your design, give the work a title and write it at the top. No further symbols, performance instructions or explanations – e.g., keys, tempo, dynamics, clefs, instrumentation, style or duration – need to be written in.

Choose a group of three or four players. In each group there should be at least three obvious contrasts of timbre.

Scan, photograph or photocopy your score so that each player in the group has their own copy, or project it onto the wall so each can see it.

Decide on a duration collectively and set it on the timer app on your phones (switch to silent, disable auto-lock / screen off).

Spread out and perform the work together by following the lines on the page and keeping an eye on the timer. Each player is free to interpret the lines with sounds, pitches, dynamics, volume and effects of their choosing – with one rule only: *the piece begins with one player.*

You may start anywhere on the page, go in any direction, and not every line needs to be turned into sound. The white areas between the lines are also part of the score, but recall that even silence can have a sound.

Your aim as a group is to create a piece of textural music – do not be overly concerned about form, dialogue, rhythmic synchronisation, or telling a specific story. Let the listeners enjoy hearing the exchange of timbres between the different personalities of the players.

This type of open-form work can be regarded as a play area – an invitation to compose collaboratively in real time. Works such as these can definitely be performed, but also provide excellent raw materials for when composing and scoring with texture and timbre at the forefront. A free section such as this can be inserted into an otherwise scripted work, or some of the accidental combinations can be later suggested with notation.

Anticipated Learning Outcomes

Definition of Texture & Timbre – including word origins and pronunciation – with focus on orchestration and percussion

Clarify wider meanings of texture with reference to the Motivic Development and Voices & Instruments kits

Introduce concepts of sound colour, ambient sound, silence and John Cage

Explain white noise, pink noise, and approach for individual sound colours

Describing sound and texture by metaphor

Define synaesthesia and relationship to music and sound

Draw parallel between timbral shifts and EQ settings, supported by example from Haydn

Relationship between context and perception of sound colour, example of optical illusion

Background to the changing role of percussion by referring to Varèse, and development of the taiko ensemble in Japan

Introduce orchestrational approach of all instruments being colour instruments

Guide to writing idiomatically for instruments

Exercise on found sound and soundscapes to encourage new roles for instruments

Definition of Klangfarbenmelodie

Role of player personalities in texture change

Importance of improvisation from Classical-era music to contemporary classical

How to create and perform an open-form graphically-scored work with reference to Earle Brown

***

Related material is contained in further 2021 *Voyage of Musical Discovery* presentations and accompanying Education Kits:

#1 MOTIVIC DEVELOPMENT
Wednesday 17 February, 6.30pm
CITY RECITAL HALL, Sydney

Australian Romantic & Classical Orchestra
MAX BRUCH Serenade on Swedish Melodies for Strings in C minor (1916)

Nick Russoniello
NICK RUSSONIELLO Suite for Saxophones and Loop Station (2018)

#2 VOICES & INSTRUMENTS
Tuesday 4 May, 6.30pm
CITY RECITAL HALL, Sydney

Australian Romantic & Classical Orchestra
FRANZ BERWALD Grand Septet in B-flat major (1828)

Sydney Chamber Choir
BRENDA GIFFORD *Mother Earth / Minga Bagan* (2020)
ELLA MACENS *Stāvi Stīvi, Ozoliņ* (2019)
CLARE MACLEAN *A West Irish Ballad* (1988)
PAUL STANHOPE *Agnus Dei:* (*Do not stand at my grave and weep*) (2016)

Web References

Page 1
Australian Romantic & Classical Orchestra | http://arco.org.au

Taikoz | https://www.taikoz.com

Voyage Booking link
https://www.cityrecitalhall.com/whats-on/events/voyage-of-musical-discovery-3-texture-timbre/

Page 4
Haydn opening on YouTube | https://youtu.be/gT9lgHMGevE

Haydn second timpani roll on YouTube | https://youtu.be/gT9lgHMGevE?t=508

Zöllner image – Wikimedia commons

Page 5
Taikoz excerpt of ...*like a ripple*... on Vimeo | https://vimeo.com/407441774

Page 7
Anita Gritsch – Body Noster on YouTube | https://youtu.be/EGOcO5DV6JU

Music for One Apartment and Six Drummers on YouTube | https://youtu.be/sVPVbc8LgP4

Page 8
Haydn comparisons on YouTube:

Concertgebouw Orchestra conducted by Nikolaus Harnoncourt, 1987
https://youtu.be/_Zkp0OIvvCA

Orchestra of St Luke's conducted by Charles Mackerras, 1991
https://youtu.be/94_p5wTkx8w

Chamber Orchestra of Europe conducted by Claudio Abbado, 1996
https://youtu.be/mz-vOfQg3jc

The Orchestra of the 18th Century conducted by Frans Brüggen, 1987
https://youtu.be/gT9lgHMGevE

Philharmonica Hungarica conducted by Antal Dorati, 1959
https://youtu.be/W8QaQhUgs7g

Page 9
Taikoz live performance of *Flowing Water* | https://youtu.be/Q-lFv-zCG1I?t=1612

Page 11
Voyage information | https://www.arco.org.au/2021-voyage-of-musical-discovery

Score Links

Haydn score on IMSLP
https://ks.imslp.net/files/imglnks/usimg/5/51/IMSLP28916-PMLP07584-haydn-sym-103-ccarh.pdf