KS5

Edexcel AoS6: Saariaho's *Petals*

by David Guinane

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INTRODUCTION

Of all the 'New Directions' works in the Edexcel A level Anthology, Saariaho's *Petals* is the only one written by a living composer (at the time of writing). It is without doubt one of the most fascinating pieces in the Anthology, but also one of the most challenging to study. This resource will look at the key elements of the piece itself, and will delve into the wider context of Saariaho's compositional style.

'Challenging' music

For many, including me, *Petals* is a beautiful and important work. For others, it can be a challenging listen. When approaching contemporary works, however, it's important to embrace the challenge of pieces such as this.

One of the stumbling blocks for younger listeners when hearing music like this is that the piece just isn't about the musical elements students have been trained to focus on over so many years. As a result, it can be jarring for new listeners.

For more on why the 'challenge' of new music is difficult for so many, try the book *Fear of Music: Why People Get Rothko but Don't Get Stockhausen* by David Stubbs.

Immersion in the style is the best way to fully appreciate contemporary composition. You may have to change the way you listen, and this takes time. To help your students, before listening, direct them to focus on particular aspects of what they hear. Perhaps give them some areas on which to focus as they undertake their first listen. Tell them to concentrate on timbre and changes in timbre, as well as texture and changes in texture. Sound quality is much more important here than melody, harmony, rhythm and the rest.

Now we've listened to the work, let's find out more about it.

KAIJA SAARIAHO

Kaija Saariaho was born in Helsinki, Finland, in 1952. After studying in Finland and Germany, she moved to Paris in the 1980s. There, she studied at ICRAM (see below), drawing influence from spectralist composers such as Gérald Grisey and Tristan Murail (see also below).

Much of her early music combined acoustic and electronic sounds, and she developed many innovations in the way that live performers and electronics work together. As she has matured as a composer, her works have grown larger in scale, and her oeuvre currently contains operas and large-scale works, as well as smaller-scale chamber pieces.

Her pieces are known for creating unique and arresting soundscapes, prompting journalist Tom Service to claim that her works provide audiences with 'some of the most luminous, beguiling and sheerly sensual experiences they can hope to have'.

We are fortunate to have access to a huge number a videos of Saariaho speaking about her life and work. YouTube is an exceptional source for this. I have curated a playlist for my students here. This contains interviews with Kaija Saariaho, a number of her works, as well as other related listening.

IRCAM

Spectral music developed in the 1970s, primarily at IRCAM, the Institut de Recherche et Coordination Acoustique/Musique (Institute for Research and Coordination in Acoustics/Music). This institute, located next to the Georges Pompidou Centre in Paris, is a scientific centre for musical research. Founded by composer Pierre Boulez, it supports those using music technology to create musical composition. Since its creation, several techniques and concepts for audio processing have been developed at IRCAM, and it remains a world leader in research today.

Spectralism

Spectralism developed alongside the technology required to analyse sound. During the 1970s, the **spectrogram** enabled composers to analyse sound in detail. Much as light produces a number of different wavelengths across a spectrum, which can be separated by a prism, the spectrogram shows us the range of frequencies (the spectrum) produced by sound. This information formed the basis for compositions by spectral composers. Rather than major or minor scales, compositional decisions were based on mathematical anaylses of different sounds. Spectral music is centred about timbre and texture. Here are two examples:

GÉRALD GRISEY: *PARTIELS* **(1975)**

Partiels (part of a larger spectral work, *Les espaces acoustiques*) is written for 16-18 musicians, and opens with an excellent illustration of how spectral music can be constructed. Using spectrographic analysis, the composer took the sound of a low E on a trombone, and broke it down into the many different frequencies produced by this specific note, on this specific instrument. These notes are then distributed among the ensemble, creating the unique timbre of the opening of this work. Essentially, the palette for the composer is provided by the computer analysis of sound, rather than the notes of a key. The BBC made a short radio programme about this in 2012, available here.

TRISTAN MURAIL: *DÉSINTÉGRATIONS* **(1982)**

Désintégrations is a hugely important work by Murail, which uses a number of spectra (computer analyses of sound) as source material. Combining acoustic and electronic sounds, each section is based on spectra produced by a variety of instruments, be it two low piano notes (section I), flutes and clarinets (section III), or brass instruments (section V). A more in-depth explanation of how the work is constructed can be found here.

Spectralism is often described as more of an aesthetic than a style, meaning that composers often use this principle to influence their work, rather than form the entire basis for it. The spectral legacy is above all an emphasis on the timbral quality of sound, or sound colour rather than traditional concepts of consonance and dissonance. More works with a link to spectralism include Tristan Murail's *La barque mystique*, Georg Friedrich Haas's *In Vain*, and of course, much of the work of Kaija Saariaho.

Of course, the spectralists weren't the first to experiment with sound colour. The Second Viennese School, for example, pioneered **Klangfarbenmelodie,** the technique of splitting a melody line among many instruments, creating new tone colours and texture. A good example is Webern's Concerto for nine instruments, or his orchestration of the ricercar from Bach's *Musical Offering*.

Saariaho as a woman composer

Saariaho has spoken at length about her experiences as a female composer, and considering her inclusion in the Anthology was the direct result of a campaign to feature more female composers in the new A level, her thoughts on her gender in relation to her art are worth noting. She has spoken of the difficulties she faced when beginning her musical education in Finland:

'There were some teachers who actually would not teach me, because they thought it was a waste of time. "You're a pretty girl – what are you doing here?" That sort of thing. My femininity was so apparent, so unavoidable.'

In 2016, she became the first female composer in 113 years to have a work performed at New York's Metropolitan Opera (the previous woman was English composer and prominent member of the women's suffrage movement, Ethel Smyth). When interviewed around the time of the production of the opera, *L'amour de loin*, she spoke again about the 'glass ceiling' many women composers struggle with today. A little tired of discussing the place of women composers, particularly in opera, she had this to say:

'I feel that we should speak about my music, and not of me being a woman.'

So, let's do that.

I have strayed from the traditional elements of music when discussing this work, for reasons that I hope will become clear.

INSTRUMENTATION AND TECHNIQUE

Petals is written for solo cello (as well as optional electronics, but more on them later). It was composed for the cellist Anssi Karttunen, and shares a strong link with another of Saariaho's works, *Nymphéa* (1987), for string quartet and electronics. Meaning 'waterlilies', *Nymphéa*, and by extension *Petals*, are a response to the Claude Monet painting *Waterlilies*. The final strains of *Nymphéa* lead directly into *Petals*, and as such the work is deliberately named – it is a 'petal' from its parent work, 'waterlilies'.

Saariaho has written a few works for solo cello. Listen to *Sept papillons* (2000), or *Près* (1992), the latter of which also features electronics.

A fundamental aspect of this piece is its use of extended instrumental techniques. A number of these are explained in detail in the Anthology. Saariaho's focus on timbre and sound quality explains the detail in some of the performance directions. Of note are:

- detailed instructions for different types of vibrato.
- three different types of glissando.
- details on how and when to move between S.P. (***sul ponticello*** – playing near the bridge) and S.T. (***sul tasto*** – playing near the fingerboard).
- instructions regarding bow pressure.

The last bullet point requires a little more explanation. Bow pressure is key in understanding how Saariaho manipulates timbre and tone colour in this work. As bow pressure is increased, the pitch of the note is slowly replaced by noise, as scratchy sounds and overtones are produced by the performer. Conversely, as bow pressure is reduced, pitch is once again replaced by soft, wind-like noise. In addition, Saariaho specifies the cellist plays *estremamente flautando* ('extremely flute-like', usually achieved by playing nearer the fingerboard). Alongside the techniques explained on these pages, other extended cello techniques include long trills and harmonics. These are mostly artificial harmonics, denoted by a square note.

There is an excellent video here featuring Saariaho and Anssi Karttunen, which explores extended techniques for strings in great detail.

Extended techniques are plentiful in Saariaho's work. Listen to her Nocturne for solo violin, or *New Gates* for flute, viola and harp, and get your students to compare the techniques in these works with those in *Petals*.

EXPLORING EXTENDED TECHNIQUES

Whatever your students play, you can get them to explore extended techniques for their own instruments. Get them to research, practise and present extended techniques that are possible on their instruments, as well as finding pieces that include those effects. A good starting point is Berio's set of *Sequenzas* for a variety of solo instruments.

ELECTRONICS

The electronics, though optional in *Petals*, are included in the Anthology recording of this piece, and as such should be studied in depth. As with the extended techniques, details regarding the electronics are detailed in the Anthology. There are three main aspects to the electronics of this work.

Amplification

The act of amplifying an acoustic instrument has huge implications for the quality of sound produced. Saariaho wants her audience to experience a balance between the natural and amplified sounds of the cello. The microphone, particularly when placed close to the instrument, will produce sounds that are distinct from those we would hear from the natural, unamplified instrument. The sound of the bow touching and moving along the strings will be more present in what hear, and the microphone will pick up different overtones and frequencies from what we would otherwise perceive. Playing with the 'tone colour' of an instrument through amplification is common in Saariaho's work. Her solo cello work *Près* specifies a similar microphone set-up.

The solo saxophone works of Colin Stetson are worth mentioning here. *Judges*, a piece for bass saxophone, utilises 20 microphones to capture otherwise imperceptible elements of performance: overtones, percussive clicks of the saxophone keys, even breath noises. Much of Stetson's work is also a goldmine for investigating extended techniques.

Reverb

Reverb (or reverberation) is the continuation of sound after it is produced. All spaces have natural reverb, and a digital reverb effect can reproduce this artificially. Consider the continuation of sound in a cupboard, and then in a cathedral. Reverb is that, and everything in between.

In Saairaho's *Petals*, the composer stipulates that the reverb time be set to approximately 2.5 seconds (except at stave 22 where it is increased to 15 seconds), and the amount of reverb (ie how much of the reverberation is in the main mix), is usually between 20% and 50%. Generally, large amounts of reverberation coincide with sections that contain a lot of glissandos. This blurs the sound of the cello, taking us further away from the conventional sound of the instrument, and further into something new.

Harmoniser

The harmoniser effect is simple: it adds additional pitches to the sound it processes. In the case of *Petals*, the harmoniser should be set to produce two additional pitches: a quartertone (half a semitone) above, and quartertone below, the note played by the cello. The use of the harmoniser in this piece usually occurs when bow pressure is also increased. The combination of these two techniques is used as tool to create more noise, and the distinctive timbre of this work.

ELECTRIFY YOUR CLASSROOM

A detailed document outlining the electronic requirements for a performance of *Petals* (or any of Saariaho's other works with electronics) can be found here.

Saariaho's piece was originally performed using the Yamaha SPX90, a big black box that could produce the desired effects. Nowadays, lots of computer software can do the same job, without anywhere near as much stress (Saariaho's video 'On Composing Using a Computer in the Past' makes this very clear). Max/MSP is the software choice of many composers who work with electronics, but lots of software can do a similar job. There is real scope for reproducing some of these effects in lessons, and its makes for a really fun activity.

Place a microphone (ideally an instrument mic like an SM57, but anything will do) on a stand in the middle of the room. To work with effects, it will need to be connected to either:

- an audio interface connected to a computer, with some studio monitors/speakers so you can hear the resultant sound, or
- an effects unit (like a guitar pedal), which is then connected to an amplifier of speaker.

If using a computer, you'll need to be able to monitor your sound directly, to get the full 'live' effect. This is usually done through headphones, so you might need to run your monitors/speakers through the headphone out of your interface. This has the potential to create feedback, so keep the levels low and raise them slowly.

The easiest software to use is probably GarageBand. Create an instrument track for guitars (check the 'I want to hear my instrument as I play and record' box), and load the program's colourful Pedalboard. The red pedal with 'Wham' written on it changes the pitch: add two of them and set the tune dial to +0.25 on one and -0.25 on the other. Reverb can be added as a regular plugin. Mix the signal with the natural sound and you are going some way to recreating Saariaho's intended effect. Get your students to play their instruments or sing into the mic, and you will get a flavour of the distinct timbral qualities that Saariaho is trying to achieve in this work. You can go further and add additional effects, but you get the basic idea.

Other software and effects units will create similar effects. Even if you are only able to amplify the acoustic instruments in your class, you can still highlight the sonic differences between natural and amplified sound, to help your students better understand this work.

Within the contemporary classical repertoire, music that combines acoustic instruments and electronics is often called 'mixed music'.

Electronics in contemporary classical composition

In Alaska, composer John Luther Adams's *The Place Where You Go to Listen* is an installation where music is created from the earth itself. Sensors capture geophysical phenomena and use the resulting data to create sound. It is an ever-changing sonic landscape that reflects the ever-changing world outside.

Another excellent Saariaho video is her workshop entitled 'Performing with electronics'. Saariaho's approach to electronics in this piece is interesting. The electronic sounds interact with the acoustic instrument in real time, and depending on the software, room, sound engineer or performer, the resultant sound will always be different. Contemporary classical music's relationship with electronics is well established, and composers have used these new sounds in a number of different ways. Here are a few recommendations for your students:

- **George Crumb's *Black Angels*** (1970): For 'electric string quartet' (either amplified acoustic instruments or electric instruments), this piece features a number of extended techniques, as well as requiring performers to play additional instruments, speak, and make other sounds with their mouths.
- **Einojuhani Rautavaara's *Cantus arcticus*** (1972): This work for orchestra incorporates recordings of birdsong.
- **Karlheinz Stockhausen's *Gesang der Jünglinge*** (1955-6): This seminal work combines electronic sounds with the human voice, and pioneered many computer-based techniques that the spectralists would later develop, as technology progressed.
- **Steve Reich's *Different Trains*** (1988): This masterpiece combines a live string quartet with a pre-recorded string quartet and recordings of spoken dialogue. The string players match the speech patterns of the recordings and create melodies from the spoken phrases.

There are countless other examples of mixed music, and countless approaches to combining electronics and acoustic sound.

STRUCTURE

The score clearly shows that traditional bars are eschewed in favour of a one-stave-per-line layout. Traditional structures do not apply in this work, but there are changes that we can chart over the course of the piece.

Colouristic and energetic

These two terms, coined by the composer, describe the alternation between quieter, 'colouristic' sections, and more intense, 'energetic' parts of the piece. Rather than reproduce the tables that chart these sections chronologically through the piece (available in both the Pearson teacher notes and the Rhinegold Study Guide), I want to highlight the features of each section:

COLOURISTIC SECTIONS

- Marked *Lento* (slowly). The composer states that the duration of each stave in a 'colouristic' section should be at least 20 seconds.
- Harmonics, glissandos and trills are common.
- Dynamics are generally quieter – the second colouristic section in particular uses only *ppp* or *pp.*
- Long note values are favoured in these sections.
- Marked *sempre legatissimo* (always as smoothly as possible) or *dolcissimo* (as sweetly/softly as possible).
- Bow pressure, and as a result bow noise, used extensively in these sections.

ENERGETIC SECTIONS

- Much faster: 54-60 bpm.
- Much shorter note values – a variety of tuplets, semiquavers and demisemiquavers.
- Rhythmically very complex.
- Louder – *ff* and *fff* are common.
- Microtonal and chromatic runs are common.
- Reverb and harmoniser effects used much more in these sections.

It's worth noting that the section beginning at stave 17 combines many features from both the colouristic and energetic sections (staves 25-6 range from ***ffff*** to ***pppp***). This can be seen as a kind of climax, before the piece ends with a very slow colouristic section.

MELODY

Melodically, there are a few points to understand when analysing this piece. As previously discussed, themes and melodic development are abandoned in favour of 'soundscapes' and timbral quality, though there are some recurring features to note.

Microtonal intervals (in this case quartertones, the point halfway between two semitones) are used extensively in this piece. The special notation is explained at the head of the score, and the use of these notes can be seen throughout. They predominantly occur as part of fast runs during energetic sections, particularly the section beginning at stave 4.

Ascending figures are common in energetic sections, and at times it's possible to identify short, recurring motifs. However, it's important to remember that these melodic ideas are used primarily to create specific sound colour as desired by the composer. Students should also identify sections with conjunct or disjunct movement, as well as noting that almost no melodic ideas are apparent during colouristic sections.

THE 'IRRELEVANCE' OF HARMONY AND TONALITY

When analysing this work, it will quickly become clear that the music does not conform to any traditional ideas of tonality or harmony. Chords and keys are nowhere to be found in this piece. The term 'atonality' doesn't really fit, either. Note names, and their relationship to one another, just aren't relevant. The piece's primary focus is on the qualities of the sounds produced, rather than whether particular types of dissonance or consonance are created. 'Sonority' trumps harmony or tonality in this work.

Consider the section from stave 13 that contains a succession of sounds comprising an open string and at least one artificial harmonic. The intervals created here have names (compound major 7th, perfect 5th, etc), but they are chosen for the quality of their sound above all else. It is also possible to identify the repeated Cs that occur from stave 15 to the end, and argue that they form a kind 'tonal centre' at the conclusion of the piece. However, Saariaho's compositional style suggests that this note has been chosen for its timbral quality (it is the lowest note of the cello, and an open string) rather than to create any sense of key.

ESSAY WRITING

Consider a potential essay question, relating to this work, that your students may need to answer in an exam:

How does Saariaho's *Petals* reflect musical developments in the latter half of the 20th century? Refer to melody, structure, sonority, as well as any other aspects of the piece you feel are appropriate. Relate your discussion to other relevant works. These may include set works, wider listening or other music. (30)

The title suggests using three musical elements to structure a response to the question. When planning or setting this essay with your classes, expand each element to ensure you include the key musical features of the work:

MELODY

- Use of microtonal intervals.
- Some repeated motifs apparent in energetic sections.
- Ascending patterns.
- Often absence of melodic content.
- Variety of note values – long notes through to dectuplet demisemiquavers.

STRUCTURE

- Contrast between energetic and colouristic sections.
- Little, if any, material shared between sections.
- Particular characteristics of sound are all that link each colouristic/energetic section.
- Indeterminate stave lengths.
- Climax combining material from both sections.

SONORITY

- Use of extended techniques: glissandos, harmonics, trills, etc.
- Specific performance directions.
- Use of bow pressure and S.P./S.T. instructions.
- Use of electronics (amplification, harmoniser and reverb).
- Notes and harmonies chosen specifically for their timbre above all else.

Students will of course need to expand on and explain these points, offering examples, wider context and wider listening, but they cover most of the indicative content for an essay like this. In this question, wider listening is essential if students are going to address how the piece reflects 'musical developments in the latter half of the 20th century'.

WIDER LISTENING

As students build a repertoire of wider listening, it's important they understand how they will 'use' the work or works in an exam situation. The more in-depth they know their wider listening, the better prepared they will be to refer to these works in an essay. In addition, knowing wider listening in detail will help prepare them for the 'unheard' aspect of the exam. To conclude this resource, we will look in some detail at two works, and how they relate to Saariaho's *Petals*. This process is useful for any wider listening, for any of the set works in the Anthology.

Kaija Saariaho: *Vent nocturne* for viola and electronics (2006)

Like *Petals*, *Vent nocturne* is for solo instrument and electronics. The viola is amplified, and uses many extended techniques such as harmonics, glissandos and other 'sound effects'. The sound of the bow itself, and how it interacts with the viola strings, is central to this work. Unlike *Petals*, the electronics include sounds of the human breath (created by Saariaho herself), which are heard alongside the live viola. The work is in two movements, and the second movement in particular has a much more melodic quality (and focuses less on 'noise') than *Petals*.

Richard Barrett: *Life-form* for cello and electronics (2011-12)

British composer Richard Barrett's *Life-form* takes a different approach to that of Saariaho's *Petals*. The electronic sounds are pre-recorded, and form a sonic 'environment' over which the cellist plays. Distinct from *Petals*, the cello affects the electronic part during performance – the sounds it produces are analysed in real time by a computer, which then applies various effects to the pre-recorded electronic sounds. This is essentially the opposite of Saariaho's piece, where the electronics change the sound of the cello. The cello writing is deliberately designed to push the boundaries of the instrument. In addition to the extended techniques and effects found in *Petals*, in *Life-form* the strings are retuned after many movements, and objects are added to the cello to further increase the range of sounds it produces.