Tipping Points: A Saxophone Led Investigation into Three Continua

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I.   ABSTRACT

This portfolio contains seven musical projects which explore various permutations of three continua: improvisation to composition, acoustic to technologized, and the 'in' to 'out'. As a saxophonist, composer, and collaborator, I investigate the continua with various techniques and approaches, aiming to create contrasting contemporary jazz albums free of stylistic restrictions.

The albums explore the improvisation to composition continua via pieces that a) are freely improvised; b) contain written material used as a basis for improvisation; and c) transition between improvisation and composition in various ways. Aiming to enhance and augment acoustic saxophone performance, I explore various techniques for working with technology. Additionally, the commentary documents the overall use of technology including techniques utilised by my collaborators. The 'in' to 'out' continuum is investigated via a range of melodic, rhythmic, and time-feel approaches. The resulting vocabulary is applied throughout the projects in different ways.

The projects include two Roller Trio albums (*Fracture* and *New Devices*) and a film soundtrack (*Promise/Threat*), two quartet projects (*The Earthworm's Eye View* and *Ikigai*), a saxophone and piano duet (*Pebbles*), and a collection of solo saxophone and electronics pieces (*Solo*). The commentary includes context, general techniques, processes, and detailed analyses of three contrasting pieces.

The portfolio demonstrates one of the infinite outcomes the continua can inspire and is an example of how a vocabulary made up of the set of techniques can be applied across different contexts.

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III. ACKNOWLEDGEMENTS

IV. DECLARATION

I declare that I am the sole author of this thesis, that the work is my own except where acknowledgements of collaborations are clear, and that this work has not previously been presented for an award at this, or any other, University. All sources are acknowledged as references.

1. SUBMITTED PROJECTS

PROMISE/THREAT FILM SOUNDTRACK (2013)

The MP4 of the film is accompanied by the soundtrack split into twelve tracks for reference purposes.

1. Fount
2. Crawler
3. Jellybean
4. Stooge
5. Wax
6. Moil
7. Beef
8. Tocsin
9. Bingo
10. Moxie
11. Honey
12. Cotard

by Roller Trio

Luke Reddin-Williams – drums

Luke Wynter – guitar

Film and track titles by Ray Kane

Recorded, mixed, and produced by Tim Thomas at ATA Studios

Funded by the Peter Whittingham Jazz Award

Position in the portfolio: This soundtrack was made by recording three improvisations while viewing the film, we then edited material from the most effective takes together. Before this, we had discussed improvisation constraints on reflection of the film's themes. In post-production, I doubled melodies and riffs and added texture where needed. Overall, *Promise/Threat* leans slightly towards technologized, mostly improvised and equally 'in' and 'out'.

THE EARTHWORM'S EYE VIEW (2014)

1. Playtime
2. Equanimity
3. Rat Bucket
4. Robin Stood as a Robin Hood Should
5. Big Saw Jigsaw
6. Breathe
7. The Earthworm's Eye View
8. For Linear Park
9. Tipping Point
10. Home time

Featuring Tipping Point

Matthew Bourne – Fender Rhodes

Michael Bardon – Double Bass

Joost Hendrickx – Drums

Recorded, mixed, and produced by Sam Hobbs at Rebel Elements Studios

Funded by Help Musicians UK Emerging Excellence Award and Jazz Services Recording Support

Position in the portfolio: Free and rebellious, *The Earthworm's Eye View* leans mostly 'out'. The mixture of compositions acting as launchpads for improvisation alongside improvised tracks leans it more towards improvisation. Its audible presence of effects processing and production leans it more towards technologized.

Performance highlights: Jazz North funded UK tour including workshops at Leeds College of Music and the University of York.

Press: multiple broadcasts on BBC radio 3 (Nelson, 2015). 'Playful, dark and spontaneous... a surefooted trip across many persuasions in contemporary music' The Guardian. (Fordham, 2015).

Lead sheets for 'Big Saw Jigsaw', 'Breathe', 'Equanimity', 'Rat Bucket' and 'The Earthworm's Eye View' are provided.

FRACTURE (2014)

1. Reef Knot
2. Doris
3. Low Tide
4. High Tea
5. 2 minutes to 12
6. Tracer
7. Splinter
8. Mango
9. Three Pea Soup
10. Tight Rope

by Roller Trio

Luke Reddin-Williams – drums

Luke Wynter – guitar

Recorded, mixed, and produced by Sam Hobbs at Rebel Elements Studios

Released on Lamplight Social Records

Position in the portfolio: Leading up to this recording, we had extensively performed and rehearsed the tunes and they had gradually become very structured, even to the point where the length of an improvised solo was fixed – leaning the project more towards composed. Apart from 'Doris' and 'Mango', the tunes were multitracked, and apart from 'Tracer' and 'Tight Rope', which were more influenced by electronics, the effects processing was mostly subtle. On the 'in' to 'out' continuum it was mostly 'in' apart from the results of contemporary melodic techniques and playing against the time-feel.

Performance highlights: Brecon Jazz Festival, headlining the Arena Stage at Love Supreme Jazz Festival, Ronnie Scott's, Band on the Wall, Canary Wharf Jazz Festival, Salon IKSV in Istanbul, British Council funded tours in Sudan and South Korea.

Press: 'Undaunted by complexity and dissonance, but at the same time not afraid to write a beautiful melody, Roller Trio make the case for challenging, relevant jazz which, more than anything, is hugely enjoyable.' London Jazz News (Carvell, 2015)

Lead sheet for 'Mango' provided.

PEBBLES (2017)

Duo with pianist Johnny Richards

12 tracks.

Recorded by Ben Eyes in the Arthur Sykes Rymer Auditorium, University of York

Position in the portfolio: This is an acoustic, improvised recording, which mostly leans 'out'.

IKIGAI (2017)

1. Ikigai
2. Horns of the Ram
3. Serpent Years
4. The Twins

Featuring

Johnny Richards – Piano

Sam Jackson – Double Bass

Steve Hanley – Drums

Recorded and mixed by Ben Eyes in the Arthur Sykes Rymer Auditorium, University of York, assistant engineering by Lynette Quek.

Position in the portfolio: We recorded the instruments on this project live, acoustically, but used various post-production techniques. The tracks are primarily composed, with form-based improvisation. While there is 'in' to 'out' exploration, the project sits mostly 'in'.

Performance highlights: Marsden Jazz Festival and Ilkley Jazz Festival 2017.

Lead sheets provided.

NEW DEVICES (2018)

1. Decline of Northern Civilisation
2. Milligrammar
3. A Whole Volga
4. Mad Dryad
5. Enthusela
6. The Third Persona
7. Sever so Slightly
8. Nobody Wants to Run the World
9. Dot Com Babel

by Roller Trio

Chris Sharkey – bass, guitar, synths, programming, production

Luke Reddin-Williams – drums

Recorded by Ben Eyes in the Trevor Jones Studio, University of York

Mixed by Alex Bonney/Chris Sharkey

Mastered by Peter Beckmann

Released on Edition Records

Position in the portfolio: *New Devices* is highly technologized. Although its source material was mostly improvised, Chris Sharkey's extensive editing and the melodies I composed and overdubbed during the post-production stage lean the album more towards composed. It shares the 'in' to 'out' techniques featured on *Fracture*, but more heavily accentuates them and therefore hovers around the centre of the 'in' to 'out' continuum.

Performance highlights: premier at Cheltenham Jazz Festival, Cork Jazz Festival as part of a five date Ireland tour, Jazz in Duketown (Netherlands), the Vortex in London, Brudenell Social Club in Leeds.

Press: 'Comparisons are useless when faced with such an innovative and iconoclastic band' *All About Jazz* (Farbey, 2018)

Solo

1. Tilikum
2. Armley Days
3. Armley Days 2
4. Tenor 1 - structuring
5. 1
6. 2
7. 3
8. 4
9. 5
10. 6
11. 7
12. 8

Tracks 1-4 were recorded at home and 5-12 were recorded by Ben Eyes in the Arthur Sykes Rymer Auditorium, University of York

Position in the portfolio:

This collection of solo pieces are mostly improvised. Tracks 5-12 use multiple microphones, including one on the larynx, and during most of the tracks, I heavily utilise audio effects, leaning it towards technologized. The pieces are mostly 'out' in their nature but occasionally feature loops or modal constraints.

Performance highlights: London Jazz Festival and Lancaster Jazz Festival.

Press: 'an intense, uncompromising performance… utterly compelling' Jazzmann. (Mann, 2015)

2. THREE EXAMPLES

The following subchapters include three, detailed commentaries of pieces which explore different positions along the continua. The examples aim to guide the listener-reader on how the continua manifest across the portfolio.

'BIG SAW JIGSAW'

(TRACK 5, The Earthworm's Eye View)

SUMMARY

The performance of 'Big Saw Jigsaw' focuses mostly on the composition to improvisation continuum. At one extreme, there is material played strictly 'as written', and at the other extreme, there is a section for unrestricted improvisation. Other points along the continuum are explored by improvising freely with the written material in different ways. With regards to the acoustic to technologized continuum, and relative to other tracks featured on *The Earthworm's Eye View*, 'Big Saw Jigsaw' is more acoustic. The recording captures us playing live together in one room with no live effects processing. But notably, during the mixing stage, techniques such as compression, delay, reverb, distortion, and EQ are used to enhance the live performance.

The 'in' to 'out' continuum is explored in all elements of this piece: within the composition, our improvisation as individuals, the way the material is improvised with, and the improvisation it inspires. Because it involves improvisation, the piece is obviously different every time it is performed. The commentary mostly refers to the recording but will also touch on other possible performance outcomes. One of the main focuses regarding the 'in' to 'out' continua is the time-feel. There are many different levels and ways that this is explored. Drummer Joost Hendrickx has an interesting way of summing up the concept of 'time' on *The Earthworm's Eye View* in general: 'For me, the concept of time and rhythm is fluid; it can be both elastic and rigid', and he then goes on to say that his improvisation aims to 'blur the lines between in time and out of time as much as

possible…. if you listen to the interaction between all members of the ensemble, you can hear that there is clear and shared understanding of this principle'. (Hendrickx, 2020)

Another shared principle is the use of extended techniques. Compositionally they help augment the material with a wider variety of timbres and textures. They also can be used to imitate other instruments within the ensemble which is explored more in the commentary for the listener-reader below. They can also be used for 'in' to 'out' exploration, with the standard techniques (which sound familiar) being conceptualised as 'in', and the extended techniques (which sound more unusual) being conceptualised as 'out'.

RECORDING BACKGROUND

During the recording of this performance, we did not use any live electronic effects processing, and during post-production there was minimal processing which had a drastic effect on the outcome. Particular attention was however paid to the studio environment to help capture a good performance. The acoustic instruments (saxophone, double bass, and drums) were recorded acoustically, and the Fender Rhodes was amplified for monitoring. The monitoring volume was considerably lower than it would be for a live performance to limit bleed from the speakers into the microphones. This limited us to a certain extent, but the limitation intensified our listening. It also encouraged us to explore our instruments' nuances when played at lower volumes. The reason the Rhodes was amplified rather than monitored in headphones was to encourage us to balance with the unamplified volumes of each other's playing and interact with the acoustics. We thought that the inevitable mix and volume differences between headphone setups might interfere with this. We felt that we might also be affected by having headphones with the instruments in mono or panned in stereo, meaning that the sound source will sound like it is always coming from the same direction, no matter what direction our head is turned to.

While the interaction in the room was important, the individual instruments were captured separately to provide more options in post-production. A ribbon microphone was used on the saxophone with the drums and double bass facing the left side of me to limit bleed as much as possible. The double bass was recorded simultaneously via a microphone and via

a pickup, the pickup allowed us to add effects in post-production without bleed from other instruments, e.g., distortion, which is especially audible around 5:50.

Now that I have provided some background on the three continua, I will move on to a chronological commentary for the listener-reader which includes transcriptions and excerpts from the lead sheet. The transcriptions are in concert pitch.

COMMENTARY FOR THE LISTENER-READER

Figure 1: 'Big Saw Jigsaw' (0:00 – 0:50 and 1:14 – 1:38, *TRACK 5 The Earthworm's Eye View*).

Figure 1 shows the keyboard part for the A section which is where the piece begins. In the rest of the score, the saxophone part includes the riff in full, and the drums and double bass are allocated the bass clef part only. The introducing section explores collective improvisation while quoting and taking inspiration from the A section materials. Repeating a 9th on the Rhodes (C#4 and D#5), Bourne starts playing in a pulse while the rest of the ensemble simultaneously plays free time; this reflects the 'in' to 'out'; Bourne is playing 'in' while the rest of us are playing 'out'.

From the first saxophone entry, I introduce extended techniques. I use ram tonguing to play the bass clef notes of the riff. Ram tonguing is often confused with slap tonguing; slap tonguing is the process of creating a pocket of air between the tongue and the reed then using the tongue to pull the reed down before releasing it. The releasing of the reed causes it to 'slap' back at the mouthpiece which is the cause of the sound. Ram tonguing involves a different physical process. When ram tonguing, the player physically hits the reed with their tongue. The air that is collected between the tongue and the reed is pushed through the instrument. Therefore, it sounds approximate to the pitch which is fingered. The tongue hitting the reed is what both stops and creates the accented, percussive sound at the end of the note. Depending on the pressure which the tongue places on the reed at the end there is also a slight ascending pitch bend before the note finishes. Regarding the use of extended techniques to imitate other instruments, I think of the ram tongue almost like a kick drum. Bardon is also using extended techniques on double bass, he is experimenting with bitones and hammer-ons, which he describes as 'stopping the note with my left hand, playing the other side of the string and tapping the other side of the string with my right hand'. (Bardon, 2020)

While continuing to avoid referencing the written material too obviously, at 0:23, I contrast the ram tonguing by introducing open slap tonguing, while the ram tonguing imitates a kick drum, the open slap is more in line with a snare drum. This is an unpitched percussive slap tonguing technique. The process is the same as the slap tongue's description mentioned above but is executed with an open mouth. Without the sealed embouchure the sound can escape from the sides and below the mouthpiece, therefore, it isn't sounded at the pitch which is being fingered because it is not forced to travel through the saxophone. The placement of the slap tongued notes at 0:23 introduces another pulse, at a different speed to that which Bourne used on the Rhodes. Throughout this section I switch between ram tonguing and slap tonguing before introducing more conventional notes associated with the composition.

Exploring the composition and improvisation continua, at 0:29, I start to introduce higher notes from the $\boxed{A}$ section riff. I do this by loosely referencing the last B of bar 1, the 1st and last B in bar 3, before playing the C's in bars 4, 5 and 6. Subsequently, I refer to the B's and quote more of the repeating descending pattern in bars 4-6 while missing out the low notes (0:35-0:42). While I quote the descending pattern, Bourne, continuing with his pulse, joins the quoting of the C's but embellishes his previous concept by accompanying the

notes with clusters and sparsely interrupting them with similarly voiced chords at different pitches. From 0:42 I revisit the C's and interrupt them by quoting the high notes of the melody in bars 1-2. The referencing, repetition and development sandwiches the improvised material and keeps the piece focused and structured.

Figure 2: From 0:42 I revisit the C's and interrupt them by quoting the high notes of the melody in bars 1-2.

In addition to the ram tongue and slap tongue techniques, I interrupt the phrase in figure 2 with a multiphonic slurred to a C4. The fingering for the multiphonic is shown in figure 3 and can be described as playing a low E fingering with the A (middle left hand finger) key open. These interruptions explore switching suddenly from 'in' to 'out'.

Figure 3: Multiphonic fingering at 0:46

At 0:48, after vaguely joining the pulse set by Bourne, I respond more clearly to his staccato notes by playing in between them and rising chromatically to build tension before conducting the next section. This interaction unifies our time-feel and sets up the more strictly composed B section. While the B section usually adheres more strictly to the score, during this point of the performance I added pitches from B2. This was in reaction to the

previous section being more chaotic than usual. Without this decision the B section would have felt too empty and stagnant. The piece then moves back to the A section, this time with more reference to the written material. The hits are executed tightly by the rhythm section. Overall, there is less improvisation and more 'in' than 'out'.

During rehearsals we experimented with different approaches to playing the opening line, the aim was to develop more ways of improvising with the material without losing the form. One of these exercises was interesting and became a featured riff. It uses the high B's, D's and E's, and the full riff is displayed in the transcription in Figure 4. On the recording, the new riff was another theme used to explore composition to improvisation and the 'in' to 'out'. The right hand of the keyboard plays the treble clef line, while the double bass and left hand play the bass clef part. The drums reference both parts, regularly using the bass drum for the bass notes and the snare drum for the treble notes. On saxophone, I merge the two and improvise phrases between the hits. This happens at 1:23, I quote the descending melodies in the 7/8 bars (1:25) and resolve by quoting the bass notes in unison with the bass. This approach repeats during the next cycle (1:27-1:33) but is developed by gradually speeding up the descending melody repetitions, loosely squeezing four repetitions into the same amount of time as the notated three and resolving again in the same way. To finish this section and cue B2, I revert to playing in unison with the right hand of the keyboard; the rest of the band recognises this and joins in, creating a collective rest at 1:38 which resolves the section before moving on.

Figure 4: An exercise created in rehearsal which became part of the composition.

Figure 5 (below) is a table showing the pattern I used to create the polyrhythm present in the B and C sections. The beats are numbered horizontally, and the bars are vertical. The working title for 'Big Saw Jigsaw' was 'Grid Tune' because of these origins. The rhythm is also provided in the drum part, and in the C section it is transferred into the saxophone

and right hand of the Rhodes. The riff is made up of a low note (L) every seven beats and a high note (H) every five beats. The cycle lasts for five bars before repeating. The notes move closer together and further apart before resolving, helping the section build in intensity. In the C section, the saxophone notes climb chromatically in thirds, building more tension before falling into free improvisation. While this new chromatic pattern is introduced, the right hand of the Rhodes repeats the notes in the double bass part in the prior section. During this recording, I also quote the C section saxophone melody during the improvisation section: another example of improvising with the composed material.

Figure 5: Grid showing how I formed the polyrhythm which is used in the B section bass part and the C section saxophone part. (L = low note, H = high note).

Beats	1	2	3	4	5	6	7
Bar 7	LH					H	
Bar 8	L			H			
Bar 9	L	H					H
Bar 10	L				H		
Bar 11	L		H				

Continuing with the theme of interrupting, B2 features descending, crescendoing melodies which interrupt all written parts. These melodies are played in unison by the whole band and occur at beat 4 of bar 18 and beat 5 of bar 21. There is also a unison phrase at bar 24, and other phrases played by the right hand of the keyboard in unison with the saxophone from bar 24-26. Again, the aim of the phrases is to unify the ensemble amongst relatively disjointed activity, exploring the 'in' to 'out' continuum within the composition. Unity is also created by providing the right hand of the keyboard in the drum part.

A less pattern-focussed rhythmic development is also explored in the right hand of the keyboard part. It is a repeated rhythm which starts at different points in each bar throughout B1 and B2. As shown in B2 and Figure 6, these are beat 1, beat 2, beat 3, the 2nd quaver triplet of beat 3, the 2nd quaver triplet of beat 4, the 2nd quaver triplet of beat 5, the 3rd quaver triplet of beat 5, and the 3rd quaver triplet of beat 6, which is repeated in unison with the saxophone (bar 26).

Figure 6: The keyboard part at B2 showing displaced repetitions of the triplet rhythm.

The A and B sections, which contrast texturally, are reconciled via incorporating the same row of notes. The first 4 bars (17-20) of B2's melody (except for the D at the end of bar 18), utilises the A section's notes with augmentations, repetitions and octave changes. Similarly, but drawing the focus from melody to harmony, I assigned the chord symbols by harmonising the notes making up every two bars. Bourne had the option of voicing the chords, for this recording he did not, giving it a sparser texture.

For the C section, the quaver triplets, which were previously used in the right hand of the Rhodes, are moved to the left hand, and copied into the double bass part. In addition to the polyrhythm this is also in the drum part, and the polyrhythm which was previously present in the bass is moved to the right hand of the keyboard and saxophone parts. Rather than using the note row from the A section again, I create more contrast by using a chromatic ascending pattern (up a tone, down a semitone) in the new saxophone and right hand of the Rhodes. This lasts until the end of the score (bar 46 and 3:01 on the recording). The chromatic ascending pattern is used to build tension towards the open improvisation which is the final compositional decision of the piece.

In release of the tension built throughout the C section, the improvisation begins explosively into a relatively dense and sustained texture. The band quickly anchors itself into a new set of improvised constraints. I use a pedal note, Hendrickx allows crashed cymbals to decay, Bourne sustains and repeats two chords and Bardon bows the near side of his bridge to create a high, uncomfortable texture.

The following paragraphs focus mainly on the saxophone improvisation. Beginning with the pedal notes at 3:02-3:13, I start off with an E, I vary its duration and decorate it with fast ascending and descending melodic lines which start to hint at the Multani (raga) (shown in figure 7). The Multani moves from 'out' to 'in' by gradually becoming more restricted to the notes and its ascending and descending rules. Figure 8 shows an example of the pedal tone being interrupted by the Multani.

Figure 7 shows the Multani (raga). It is pentatonic when ascending and heptatonic when descending.

Figure 8 shows an example of the pedal tone being interrupted by the Multani (3:02 – 3:13).

Before completely moving 'in' to the Multani, from 3:13 I switch to an Eb pedal note, settling more into the harmony while the overall texture of the ensemble softens. At 3:28 I introduce a D to act as a passing note between the Eb and the Db: quoting the Multani's descent. I then improvise with the Multani scale, with the addition of the D (transcribed below in figure 8.1).

Figure 8.1 shows a transcription of the saxophone line from 3:28 – 3:38. The line explores the Multani plus a D which is used as a chromatic passing note.
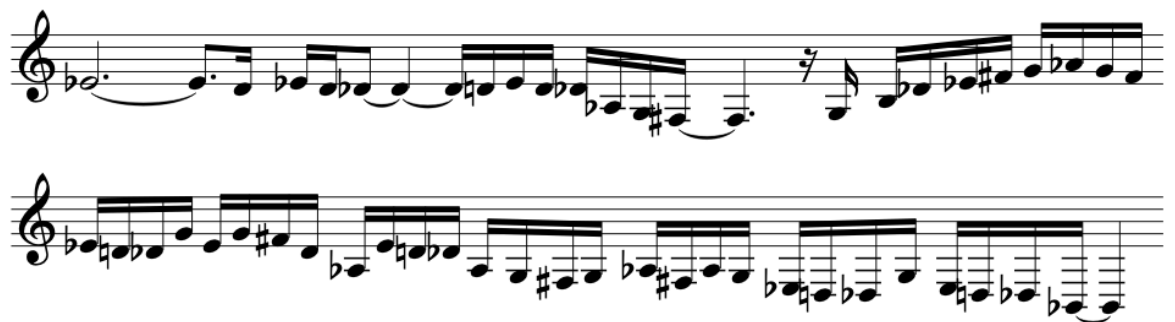
Moving forward, I continue to utilise the Multani (raga) to explore the 'in' to 'out; the 'in' by following the note choices and the ascending and descending rules, and the 'out' by breaking the rules and substituting notes. Rhythmically I set patterns using note groupings. Figure 9 shows the rubato phrase from 3:40 to 3:50. Here, I explore rhythmic patterns by grouping segments of the Multani. I repeat an 8/16 pattern four times before creating a 5/16 grouping with two demi-semiquavers and 5 semiquavers. I then introduce a third phrase which is 4 semiquavers long, then switch back to the 5/16 pattern before returning to the 4/16 pattern. To conclude and focus the phrase, I create a two-note grouping using the tritone between the Db and the G.

Figure 9: Saxophone phrase at 3:40 – 3:50 which explores note groupings within the Multani (raga).

Continuing in a similar fashion, I introduce more notes which interrupt improvised restrictions, and explore different numbers of notes within a phrase, including the maximum possible reduction which is a two-note trill (4:20).

From 4:28 to 4:48, I contrast the previous material by introducing phrases built from longer, sustained notes. The phrases are made up of motivic repetition and development, and antecedent and consequent phrases. I decorate these long notes in different ways, e.g., with harmonics acting as alternative fingerings, glissandos, and varying vibrato rates and depths. I also use a multiphonic at 4:36 in a similar way to how I used the harmonics. At 4:37, the arco double bass and saxophone are interacting with each other by meeting with the same pitch. The drums also interact with the beginning and end of the saxophone phrases. This is most clear at 4:47 and 4:50, where in two cases, Hendrickx and I stop and start in unison. The improvised material limitations and ensemble interaction unifies us and creates a new section of equal value to the composed sections.

By referencing prior material, I aim to create narrative and a coherent structure. At 4:49 I switch back to the theme which was featured at the start of the improvisation by interrupting held pedal notes. Another gear change occurs at 5:00, where I begin to use wider intervals. I also aim to keep it related to the previous material by using similar style Indian influenced ornaments (gamaks). Part of my practice as an improviser has been to stay mindfully present enough to remember what I have played so it can be later referenced.

With regards to Bardon's double bass playing in this section, at 4:55 he introduces sautillé bowing and sustains a G drone across two strings. This greatly influences the harmony by creating an anchor for everything else to relate to. Following this, at 5:09 I move 'out' of the previous language by introducing lines made up of bebop influenced language and articulation. This results in a change of time-feel, adding a sense of urgency to build momentum. Bardon then introduces another note to his drone at 5:17. I quickly react to this by reverting to the fast-repeated phrases with different length rhythmic groupings, as previously played and explored in figure 9. This time, however, the idea is more embellished with trills, repetitions, and interaction from the drums (5:26). Additionally, the interaction from the keyboard increases intensity, with the double bass drone becoming more aggressive by emphasising the harmonics.

In a similar way to how I referenced the opening pedal notes of the improvised section, as mentioned earlier, at 5:36, I revert to earlier material by loosely quoting the [C] section's saxophone melody. The melody allows more space for the rest of the band to build tension while providing predictability to both the band and the listener. The predictability is especially utilised by Hendrickx, who reacts by playing some of the hits with the sax and using fills to set them up.

To end the passage at 6:04, the tension created by the quotation of the [C] section's saxophone melody is released with the bass changing to pizzicato, almost in the style of time-no-changes swing. The drums also idiomatically hint at this, with more continual use of the ride and hi-hat cymbals and the use of the snare and kick drum to interact. The keyboard continues with a similar concept as the previous section, but subtly shifting with homophony and tenuto articulation. It's difficult to be sure if this was a conscious or subconscious reaction to the bebop phrasing introduced at 5:09, but regardless, the results are equally as effective. In contrast to the previous section and to provide room for the

rhythm section, at this point I have changed to long screaming notes and multiphonics while the ensemble's texture intensifies.

To follow this, I provide further space for the rhythm section causing a sudden change in texture. At 6:30, the space allows the keyboard, bass, and drums to gradually transition back into the referencing of the A section material to finish the piece. Referring to the continua, we are transitioning from 'out' to 'in' and improvised to composed. Bardon is referencing the bass part of the A section which becomes clearest at 6:44. I respond to this by also quoting the A section's descending lines in bars 4-6 and the low notes of the riff. E.g., at 6:48 I quote material from bar 3 which is shown in figure 10. Additionally, at 6:50 I quote the descending line with its final note missing, and at 6:53 I quote two of the low notes and continue switching between and developing these ideas. In reference to the previous swing and time-no-changes improvisation, from 7:26, I quote the line in full, but with contrast via heavy swing feel and articulation.

Figure 10 shows the quoting of bar 3 at 6:48

More 'out' to 'in' movement follows at 7:48. Bourne and I separate from the drums and bass, quoting the treble clef material in figure 4 and gradually lining up with the drums and bass at 8:02. In reaction, Hendrickx quickly joins in with the last note of bar 2 and 1st note of bar 3 in figure 4 (the exercise created via removing notes from the A section riff).

At 8:04 the band finally reconciles and plays figure 4 in full, but it is not long before we start experimenting with this. The drums and bass switch from the bass clef material to the treble, resulting in us finishing with stabs which were sometimes executed tightly and sometimes executed loosely, creating a flam effect. Structurally there was no set way to finish the piece. The composition can be thought of as a head and used traditionally in a head-solo-head structure. But more often the improvisation would depart so far from the

composition that the opening material would never be revisited. From listening back to the recording, towards the end of this performance, we evidently felt it was appropriate to finish by improvising with figure 4. During other performances, sometimes the piece would finish either during the open improvisation section, or with the improvisation leading to another tune completely. Sometimes the initial head would emerge from an improvisation which either began openly or derived from another piece. What mattered most was that we felt free to follow whichever direction we felt was right at the time, based on what we were hearing.

'TILIKUM'

(TRACK 12 Solo)

BACKGROUND

'Tilikum' is named after an orca who was captive at SeaWorld, Orlando, and the focus of the 2013 documentary *Blackfish.* The documentary concerns the cruel and unsuitable living conditions for the animals at SeaWorld and argues that Orca should not be held in captivity at all. While orca attacks on humans in the wild are rare with no known fatalities, Tilikum was known to be mentally unstable and was involved in the death of three humans. The piece is influenced by the sounds of the whale in its enclosure and the improvisation allows for an emotional response.

SUMMARY

'Tilikum' consists of a brief set of compositional instructions which include improvising with a list of saxophone techniques. The techniques are then processed through a fixed chain of guitar pedals. Some pedal parameters remain fixed while some are manipulated in performance.

In contrast to pieces from other projects in my portfolio, 'Tilikum' focuses more on the extremes of pitch, duration, timbre, and texture. This means that traditional melodic and harmonic analysis is not as relevant. Regarding this, the 'in' to 'out' is reconceptualised by playing against the constraints of the piece, facilitating freedom for an emotional response and creating anomalies (see below). In this respect, the piece is mostly 'in'. When new behaviours are introduced, these could be perceived as 'out', but quickly become part of the piece's language.

The performance instructions which set up the constraints for the piece are as follows:

1. Freeze a strong, open slap tongue.
2. Engage Hexe Revolver. (More information on this and the Zvex Fuzz Factory effects pedals in the setup section below.)
3. Improvise with open slap tonguing, quiet high notes, teeth squeals and low note ram tonguing.
4. Improvise with the settings of the Revolver for subtle contrast. The Fuzz Factory and OC-3 are armed and ready for engagement to create sudden and obvious contrast.
5. Other techniques can be used in the case of highly irresistible impulses. The impulses should not be ignored, they are likely needed for contrast/momentum.

To accompany listening to this piece I have created a listening score to graphically represent the chosen take. I have also attached a video animation, which as well as a submitted file is available on YouTube (https://youtu.be/JZc03ZAbqt4). During the video the graphics are introduced in real time to make the sounds they represent clearer. The score has also been helpful for reflective practice and analysing what was successful about the chosen take.

COMPOSITION, ACOUSTIC TO TECHNOLOGIZED, 'IN'

The piece begins by freezing a slap tongue using the Electro Harmonix Freeze pedal. The frozen slap continues throughout the piece before I stop it by double clicking the foot pedal just before the final notes at 2:51. The frozen sound acts as a drone, and with the static settings of the reverb and delay, it provides a continuous sense of space, keeping the rest of the sounds in one environment and reflecting the orca enclosure.

Structurally, I gradually introduce sounds and behaviours to build intensity. The builds are also interrupted with contrasting saxophone or pedal techniques. Because they are repeated, the techniques are listed in the performance instructions and are clear in the listening score. The techniques are represented in the listening score with different shapes, a key is provided in the score at the end of this chapter. The techniques include:

- Frozen open slap tongue, which is the drone throughout the piece.

- Sampling of the drone at different rates and lengths.

- Open slap tongues.

- Subtle faded tones, which are either played on the saxophone or are made up of densely repeated microsamples captured by the Hexe Revolver.

- Teeth squeals. This technique is achieved by placing the teeth on the reed and blowing. Although they are limited to a high frequency range, the amount of pressure from the teeth changes the pitch of the note and allows for controlled glissandos.

- Low note ram tongues.

- Sudden distortion.

The fifth performance instruction, listed on the previous page, is to use other techniques in the case of an irresistible impulse. These appear as anomalies in the score and are explored more in-depth below.

ANOMALIES ('OUT' AND IMPROVISED)

The anomalies, which can be classed as 'out' techniques, are a selection of ideas which only happen as one-offs but still serve the piece. One of these includes hitting the microphone with my leg at 1:49. This is made possible by having a clip-on microphone on the bell of my saxophone. It adds a different timbre, still creating a tone, but with a harder attack which results in more distortion.

Another anomaly which is only used once, is the glissando imitating phrase at 1:22. This is achieved by decreasing the speed of a loop on the Hexe Revolver using my toe. It stretches the duration causing it to fall in pitch. Similar in its individuality, the next anomaly occurs at 2:18, and is a very subtle, unpitched double tongue, which is looped before being interrupted by a low sub tone. This subtle technique is effective in mixing the contrasting timbres of the ram tongues and the slap tongues while producing a softer attack. It also creates the effect of breaking up the fast loop by looping two slightly different timbres. The double tonguing technique used here is produced by tonguing the reed approached

from below and above. The two slightly different timbres achieved from the opposite tongue positions are looped. The loop is consequently more complex than it would have been if I had played an unpitched single tongue.

Another anomaly occurs at 2:38, where a one-off teeth squeal is produced but split with the octave below. For me, this apotheosis represents the pain and mental torture which Tilikum went through shortly before his life (and the piece) comes to an end. Finally, one of the most significant anomalies is the closing phrase at 2:53. This is three repetitions of the lowest note on the tenor saxophone, Ab2, which produces the harmonic an octave above. The octave below the original note is also audible, provided by the Boss OC-3 Pedal. Inspired by the downward facing triangle note head used in contemporary notation, I have used downward facing triangles for the final notes in the listening score.

SETUP

The saxophone was captured via a clip-on AMT LS microphone. The clip-on microphone allowed me to move around and crouch to adjust the pedal parameters while still being able to play and provide a consistent input signal.

The pedals include:

- Electro Harmonix Freeze Sound Retainer,
- Boss OC-3 (octave pedal),
- Boss DD-7 (digital delay),
- Zvex Fuzz Factory (distortion),
- Hexe Revolver (micro sampler used for glitch and stutter effects),
- and the Boss RV6 (reverb).

The reverb and delay settings are fixed throughout the piece, the octave pedal and distortion are also fixed but engaged sparingly and sporadically. The Hexe Revolver, once engaged at the start, remains armed, but I switch between manual (where I control parameters in real time) and the automatic settings which add a level of indeterminacy.

In line with the Orca at SeaWorld being kept in enclosures which are too small for them, I used fast, intense delays set with short feedback, to represent surfaces close together and to make it sound claustrophobic. I used the Boss RV-5 (Digital Reverb) for the reverb, it has a distinctive modulation setting which detunes throughout the decay. Although it is not a true representation of sounds underwater, the sound of something being 'drenched' or 'drowning' in reverb conjures the ideal imagery for me in this case. It also provides an extended decay for transient sounds, e.g. the open slap tongues which are very staccato. The decay inspired the right pointing triangle symbols in the listening score; if I were to illustrate the dry slap tongued notes, dots or vertical lines would have been more appropriate. The reverb also unifies the sounds, reduces the aggression, and adds atmosphere, giving them similar characteristics even though they contrast extremely.

The speed of the delay also provided a subtle tempo, around 120 bpm. Even though a pulse isn't meant to be indicated, the opening slap tongues can be transcribed quite easily onto a 4/4 grid at 120-bpm (shown on the next page). However, as the improvisation with the Hexe Revolver resumes, the pulse gets more complex and multidimensional, transitioning between the 'in' and 'out'.

Figure 11. Shows a notated transcription of the introducing open slap tongues.

The Hexe Revolver was switched between several different settings with some live control of parameters. One of the modes is the 'auto: self-triggering mode', where all parameters are random, but different intervals can be set with the speed knob. This was the mode I had it set to when not manually adjusting the settings. When this mode was selected there was

a constant flow of glitches, which meant that along with the live saxophone input, the frozen slap tongue kept being triggered at different length loops, speeds, and tones. Adding a layer of indeterminacy, the sensitivity and complexity of the parameters working together meant that I did not fully know what the results of changing the settings would be. There is also a dry/wet switch, the dry setting means that the dry signal is present as well as the wet, and there is also a wet level knob. I adjusted the switch and the knob throughout the piece, making the frozen slap tongue from the freeze pedal dip and re-enter, which is most audible at 1:44.

'Tilikum' Listening Score
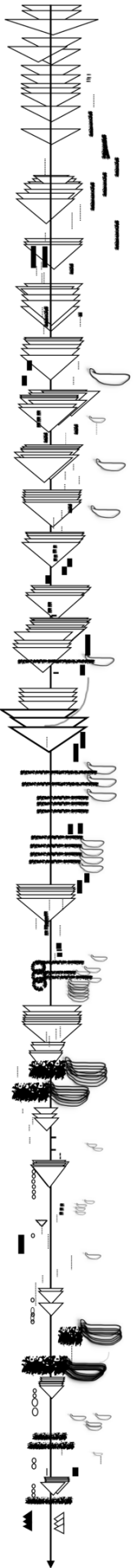
Open slap tongue, thicker lines representing stronger slap

Frozen open slap

Subtle faded tones

Fast loops

Teeth Squeal

Changes in drone volume and texture due to the Revolver sampling it

Decreasing speed of loop, causing it to slow down and fall in pitch

Unpitched flutter tongue

Ram Tongue

Loud, distorted sounds

Low saxophone note and harmonic

Hitting microphone with leg

Densely Repeated micro sample

Saxophone

AMT LS (Clip on microphone)

Mixing Desk

Animated version available on YouTube: https://youtu.be/JZc03ZAbqt4

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'ENTHUSELA'

Track 05 New Devices, Roller Trio

COMPOSITION TO IMPROVISATION

Regarding the composition to improvisation continua, 'Enthusela' is an improvised piece from the *New Devices* album with Chris Sharkey on Ableton Push 2, Luke Reddin-Williams on drums and me on soprano saxophone. Before the recording, there were no preconceptions other than the sounds of the instruments. Repetition, motivic development, interaction, audio effects, and the pitch shifted saxophones, aim to make the improvisation sound as structured as a composition would be.

ACOUSTIC TO TECHNOLOGIZED

The piece was recorded at the Trevor Jones Studio at the Department of Music, University of York, and is a track from Roller Trio's *New Devices. New Devices* features a blend of acoustic instruments, samples, and software instruments, with equally substantial effects processing and editing. But unlike many of the other tracks on *New Devices*, there was no editing on 'Enthusela'; the structure was improvised live.

Sharkey used the Ableton Push 2 (Push) to play the software baritone guitar instrument in Spectrasonic's Omnisphere. He also used the Push to activate saxophone loops which we recorded in advanced. The loops continue throughout the piece, in a similar way to the drone in 'Tilikum'. Sharkey copied the loop onto 4 tracks, two of which were hard-panned left while the remaining two were hard-panned right. Within Ableton Live, each track runs through a separate bandpass filter which is then modulated by a low-frequency oscillator (LFO). The LFOs are set at slightly different very slow speeds. The tracks are also processed with different reverb settings and mostly consist of the wet signals. Creating additional variety, the reverbs are a combination of small rooms, halls, and springs. The overall effect is complex and ever-changing throughout the track.

During post-production, Sharkey harmonised the saxophone by copying the recording onto two other tracks, one was pitch shifted down a perfect 4th and the other up a perfect 5th. The breakdown which occurs at 4:00-5:29 was emphasised by muting and fading in the harmonised tracks.

Using headphones as monitors, the performance was captured with Sharkey and me in the control room and Reddin-Williams in the live room. This meant that the drums and saxophone were in separate, soundproof rooms allowing us to process our instruments separately without bleeding into each other's microphones. Between the live room and the control room, there was a window which we could use to interact visually.

'IN' TO 'OUT'

The 'in' to 'out' is explored in this subchapter, and in further depth during the commentary for the listener-reader. Regarding the fixed interval saxophone harmonisation mentioned in the Acoustic to Technologized subchapter above, the process created interesting harmony; even when the acoustic saxophone was playing 'in', there were pitches that were 'out'. E.g., while the Bb major notes are played in the baritone guitar riff, if the saxophone simultaneously plays a D, it is harmonised either side of the note with an A. This is 'in' because it is the major 7th of the scale. In contrast, when playing an A, it is harmonised with an E, which clashes with the Eb in the bass.

Throughout the piece, the two baritone guitar riffs are the simple harmonic and rhythmic foundations. The riffs are monophonic, and the ensemble does not have a chordal instrument. So along with, and relative to, the textural saxophone loops, the riffs imply chord changes but harmonically can be interpreted in many ways. If I knew what notes Sharkey was going to play in advance, I would have most probably highlighted the overarching harmony straight away. This would have been using modes from Bb major, e.g., starting on D Phrygian and ending on Eb Lydian. But because I didn't know what Sharkey was going to play the first time, I think it encouraged me to gradually introduce the indicative harmony and explore a variety of approaches before settling, which I also think created interesting results. These approaches included various melodic devices, such as side-stepping pentatonic scales and major triads, some examples with transcriptions are again, provided in the next subchapter.

Figure 12 'Enthusela' example of Sharkey's baritone guitar line, played live on the Ableton Push 2.
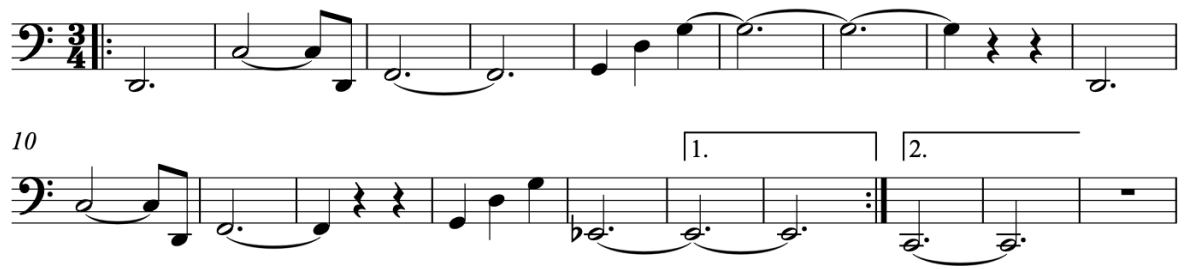
The baritone guitar line was in 3/4. Rhythmically, Reddin-Williams and I explored various points along the 'in' to 'out' continuum: playing freely against the pulse, tight with the pulse, and everywhere in-between.

COMMENTARY FOR THE LISTENER-READER AND MORE IN-DEPTH 'IN' TO 'OUT' EXPLORATION

The piece begins with Sharkey triggering the saxophone loops with the LFO modulated parameters in motion. This is followed by the 3/4 baritone guitar riff entering. The notes are heavily accented and have a strong presence which sets the mood of the piece. The riff is to a pulse, but Reddin-Williams enters with a contrasting textural improvisation limited to hi-hat and free of the pulse. Simultaneously exploring both extremes of the 'in' to 'out' continuum, this is opposite to the baritone guitar line, it is intense and staccato, whereas the bass line is legato and spacious. As the soprano saxophone enters at 1:12, Reddin-Williams reacts by thickening the texture by using more of his kit.

The introduction felt very atmospheric, almost cinematic, and while I play quite complex phrases, I leave lots of space between them and aim to vary re-entries to surprise the listener. Alongside the imagery, between phrases and short notes, my concept was to rest until it felt like it was almost too late, or like my ears were trying to force my fingers to play. Throughout the piece I make use of the saxophone side keys to create grace notes and trills within the phrases, the physicality of this made it feel as percussive as it was melodic.

Furthermore, hearing the timbre and note choices of the baritone guitar conjured up American rock and blues imagery in me. This caused me to react by regularly referencing the blues scale. After playing mostly 'in' the harmony, at 2:04 I start to introduce 'out' note choices, adding the major 6th, b6 and b5 before resolving the 5th, which is a chromatic enclosure of the 5th. At 2:17 I added the 9th to the pentatonic and trilled between 9th and the minor 3rd. Like the techniques explored in 'Big Saw Jigsaw', I started playing melodic shapes and adding or reducing notes at a time. Reddin-Williams responded to this by dropping out, shaking a tambourine, and from silence, playing a fill into a full 3/4 groove.

Over the groove I tried to stick to a similar style of playing, but occasionally interacted with the time-feel when playing quaver lines, such as the return to the blues motif at 2:38. The next phrase, at 2:48 (notated below), is where my 'out' playing starts to become less subtle. The phrase starts by holding the root note and hinting at the blues scale, this is then followed by note groupings which, relative to what I'm thinking of as the parent mode (D Phrygian), accent the major 3rd, #11, maj7 and major 9. This phrase also is an example of motivic development within faster lines. In bar 4, the first four semiquaver chromatically descending pattern is followed by a similarly four semiquaver descending pattern but with the distance between the highest and lowest notes augmented from a minor 3rd to a tritone. This descending contour appears again on the last beat of bar 5 of the excerpt.

Figure 13 displaying a transcription of the soprano saxophone phrase at 2:48, rhythms are approximate.

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The phrase following this, at 3:09, is an example of where I have used major 7th arpeggios, triads, 4ths, and the augmented scale to play outside of the harmony. It also rhythmically speeds up and slows down.

Figure 14 showing a transcription of the phrase at 3:09. The analysis shows the superimposed chords which the melody is arpeggiating.

The line starts on an F, which is the same note as what the bass is playing at that point, but instead of thinking of it as the root, I approach it as the major 7th of F# major and ascend into a 'Giant Steps' style line. The relation between the shapes I play to the bass notes create some interesting results. As noted above the stave in the transcription, the lines outline a F#maj7 arpeggio, then an A triad to playing in D major, the D major pattern starts when the bass is playing a G, creating Lydian harmony, the E triad towards the end of the same bar creates b9 natural 13 harmony. The F triad over the Eb in the bass creates more Lydian, the D+ over the Db creates minor major 7 harmony, and so on.

The line also contains language using George Garzone's Chromatic Triadic Approach. This is where melodic triads in any inversion or permutation are linked together by a semitone step. E.g., in bar 4 of the transcription, the 5th of the ascending D triad in 1st inversion links to the 5th of the descending Eb in 1st inversion, or in bar 7 where the root of the descending F triads links via a semitone to the 5th of the descending B triad.

Continuing to explore 'in' to 'out' movement, from 3:22 I use descending shapes, starting with a Gm pentatonic, then a pentatonic made up of G B C D F, a broken F#m7 arpeggio, D#m arpeggio, then a descending A G F C Ab F, where I was most likely thinking of it as a F blues/F7#9 shape.

To create more variation, at 3:29 I introduce a series of glissandos. For a wider pitch range and a more whiny and open sound, I produce the glissandos using my bottom lip. This is an alternative to the cleaner and more muted glissandos found on other pieces (e.g., 'Playtime', *TRACK 1*, *The Earthworm's Eye View*) which is achieved by slowly pressing or lifting the keys. The phrase in this piece involves choosing a note, then bending the note down and back up to the pitch, but before returning to the original pitch, moving to a different note. I do this in a descending scale in thirds type movement, the pitches are A bent down to F#, G bent down to F and F# bent down to E before resolving to the F.

At 3:34, I return to blues patterns before creating more contrast by moving into trills and glissandos, playing purposely out of tune, and producing different tone qualities by loosening and tightening my embouchure. From 3:46, Sharkey loops the last two bars of the baritone guitar riff to repeat between a G and Eb, indicating Gm and Ebmaj, this influences Luke and I to lower the intensity and initiate a break down. The breakdown occurs at 3:58 via a decrescendo in the drums and less use of cymbals. This is also emphasised with a low pass filter on the drums, the frequencies are later suddenly reintroduced with the fill at 5:38, which along with the use of cymbals crashed consistently, leads to the peak and thickest texture of the piece.

I respond to the breakdown and reflect the drums by exploring longer notes with more space, and as previously stated, the harmonising effects were turned off to help further thin the texture. After playing a few phrases as one-offs, I decided to start repeating a phrase at 4:41, which went on until 5:53. At the time, the decision to repeat the phrase came from the feeling of it being melodically strong enough to be repeated, and the feeling of it coming at the right time in the context of what had happened before it. Using the repeated

phrase, I created slight contrast by subtly changing note lengths and ghosting notes. After playing more complex material before the breakdown, it seemed appropriate to leave more space and reflect the simplicity of the bass line and groove. As the track builds again, the harmonised soprano saxophone tracks are added back into the mix to strengthen the acoustic saxophone's presence. Underneath, there are also subtle additions to the bass which interact well and are effective in creating lots of forward motion, these are as small as the adding of the F between the G and Eb at 5:24.

The final moments of the piece include another improvised melody at 5:53, which I similarly repeat and develop, before peaking with a high sustained note and dying down to conclude the piece. During the outro (6:31) Reddin-Williams returns to the same free-time, metallic texture as he did during his entry at 0:58, further providing narrative and structure.

3. CONTEXT

3.1 DISCRETE INFINITY: FREE-ASSOCIATIVE MATERIAL APPLICATION

As in language, 'discrete infinity' is present in music (Berkowitz, 2010, p. 3). When performing, an improviser has a finite lexicon and syntax which has infinite possibilities. It might be continuously expanded and refined; but when executed during collaboration and in different contexts, infinity, and the fact that every moment is unique, is genuinely celebrated. The projects in this folio aim to explore making music freely, both by expanding my vocabulary and by fusing aesthetics and idioms which I have been interested in at different points in my life so far.

Because of the free-associative processes in my work, I thought it might be helpful to include a brief history of myself. I grew up in Warrington, England, my mother is a classical piano and flute teacher. I was interested in the saxophone, but while my hands were too small, I started first on the clarinet. Always curious and influenced by a wide variety of music, I took classical lessons, sang, and played guitar in rock bands, joined Wigan Youth jazz Orchestra, and studied with Mike Hall before moving to Leeds to study at Leeds College of Music (LCoM) where I received a BA (Hons) in Jazz.

During my first two years at LCoM I focused on traditional and common approaches to contemporary jazz; studying saxophone with Jim Corry, Joel Purnell and composition, aural and ensemble studies with Jamil Sheriff. Traditionally, I explored harmonic and melodic language – scale to chord relationship, licks, bop scales, note groupings, and patterns, and studied saxophonists such as Charlie Parker, Cannonball Adderley, and John Coltrane. Following this, my interests progressed to contemporary jazz, investigating Jerry Bergonzi's Inside Improvisation Series (*Developing a Jazz Language*, *Pentatonics*, *Hexatonics*, *Melodic Rhythms*, and *Thesaurus of Intervallic Melodies*) while studying saxophonists Rosario Giuliani, Kenny Garrett, Peter King, Michael Brecker, and Mark Turner, and pianist Keith Jarrett and guitarist Kurt Rosenwinkel. Towards the end of my degree, exploring the experimental, improvised music scene and studying with Christophe De Bezenac, Matthew Bourne and Dave Kane, I became interested in composition, free improvisation, different ways of organising improvisation, contemporary classical

techniques, and extended saxophone techniques. In addition, to Bourne, Kane and De Bezenac's solo music, I was interested in their ensembles made up of members of the Leeds Improvised Music Association (LIMA) and other collectives such as London's Loop Collective. This also led me to other saxophonists who use extended techniques – significantly John Zorn, John Butcher, Evan Parker, Anthony Braxton, Håkon Kornstad, and Colin Stetson.

With these personal discoveries, I was drawn to the University of York and its exciting contemporary classical and electro-acoustic activity after attending a chimera concert and meeting some of the interesting lecturers and postgraduate students. Continuing my studies on the MA Composition course there, I did three projects, one solo saxophone album exploring the organisation of improvisation via timbres achieved by extended saxophone techniques, Roller Trio (which continues its journey into this portfolio) and a six-piece ensemble exploring the organisation of improvisation via textural and timbral constraints. Some of the saxophone techniques I worked on were circular breathing, flutter tonguing, double tonguing, slap tonguing, multiphonics, harmonics and teeth squeals (Zornian style teeth on the reed).

3.2 THE TRIVIBRATIONAL DYNAMICS

In 1985, during a UK tour with pianist Marilyn Crispell, bassist Mark Dresser, and drummer Gerry Hemmingway, the uncompromising, multi-instrumentalist and composer Anthony Braxton was joined by author Graham Lock, who interviewed him on his music and thoughts. These interviews and travelogues were published in a book, *Forces and Motion: The Music and Thoughts of Anthony Braxton* (1989). I read this at a time when I was discovering Braxton, improvised music, and graphic scores. One of the interviews that influenced me was Braxton's theory of the Tri-vibrational Dynamics. (pp. 162-167)

The following paragraphs aim to explain the Tri-vibrational dynamics, but before moving on, while Braxton's theory involves three categories, these are in no way related to the three continua explored in this portfolio and are only relevant to the context. My projects explore improvisation to composition, acoustic to technologized and the 'in' to 'out'; the tri-vibrational dynamics explore Braxton's definitions of restructuralism, stylism and traditionalism.

By restructuralism, Braxton is referring to a drastic change within any 'information continuum' and uses Charlie Parker as an example because he provided a new language for what became the 'post-bebop continuum'. Stylists are the people who continue to use what is created by the restructuralists, Braxton also points out that there are master stylists that do not 'take without giving'. Traditionalists are those who strive for an understanding of the fundamentals which are present throughout a lineage.

Braxton then goes on to explain why too much of one dynamic is problematic - stating that too much emphasis on restructuralism leads to a lack of 'cultural solidification', while stylism and traditionalism lead to 'no forward motion'. Following this, he expresses that 'tri-vibrational dynamics is my term to express the balance of these phenomena, the forces as manifested in this context. And I respect what that balance really means, although my own tendencies are restructuralist'. (p. 165)

This theory greatly resonated with me at the time, it helped with writer's block which was caused by everything I envisage reminding me of something else (trying too much to be restructuralist), and oppositely, trying to imitate or be influenced by something too much (too traditional or stylistic). Mindful of this, I realised that taking a more free-associative approach to music-making helped with the balancing of the dynamics. The free-associative

approach became a relatively simple process in composition and especially in collaboration/improvisation. As stated, while Braxton and his theory has influenced me, the three categories are different from this portfolio's set of continua.

3.3 Wider Context

This chapter explores the wider context and influences behind the projects. Most of the examples I have provided are from *Ikigai* because it is one of the projects which most obviously displays my jazz influences. When listening back, I hear explicit and subconscious references to albums that I've studied over the last twelve years.

The improvisation and composition in the portfolio, where harmonically appropriate, contains lots of blues and root based melodies and riffs. Aside from the solos, where the devices are regularly referenced, an example within a composition includes 'Ikigai' (*TRACK 1, Ikigai*). , where the end of bar thirteen features the blues scale, and the first notes of the next two bars start on the roots of the chords.

The work of John Coltrane and Wayne Shorter, especially during the mid-sixties, has also inspired my work. E.g., Both released in 1964, the title album track 'Crescent' by Coltrane and Shorter's 'Oriental Folk Song' from *Night Dreamer*, both contain free, explosive textures which influenced the introduction to 'Ikigai'. The 6/4 heavy swing during the saxophone and piano solos on 'Ikigai' also continue to be influenced by this period. Additionally, the A section which introduces 'The Twins' *(TRACK 4)* is influenced by John Coltrane's '26-2' (1960). A comparison is shown on the next page.

The chords for the A section of 'The Twins' are

|| Fmaj7 Ab7 | Dbmaj7 C7alt | Gm7 Am7b5 | Bbmaj7#11 | / ||

The opening chords of '26-2' are

|| Fmaj7 Ab7 | Dbmaj7 E7 | Amaj7 C7 | Cm7 F7 |

Coltrane's mid-sixties modal jazz style is also present on many other albums which I have been inspired by. One of these is Kenny Garrett's *Beyond the Wall* (2006) which features Pharaoh Sanders (who played with Coltrane in 1965-67). 'Serpent Years' (*TRACK 3*) is especially inspired by Garrett's Asian influenced melodies. Further drawing connections to Coltrane, 'Horns of the Ram' is influenced by his second wife, Alice Coltrane, with a melody which (accidentally) imitates 'Om Supreme' from *Eternity* (1975), where the vocalists repeat 'Hiranya-anya Loka, Sri Rama-rama Loka.'

From either side of the Atlantic, two contemporary jazz trios have inspired my work, these are Phronesis and The Bad Plus. Phronesis features double bassist Jasper Høiby (Denmark), pianist Ivo Neame (UK), and drummer Anton Eger (Sweden), and The Bad Plus is made up of America's double bassist Reid Anderson, drummer Dave King, and pianist Ethan Iverson (who was later replaced by Orrin Evans). These bands initially inspired my use of riffs and odd time signatures. More generally, continuing with examples from *Ikigai*, the B section of 'Horns of the Ram' is an example of a simple texture created by arranging intricate unison riffs for double bass and the left hand of the piano. Some examples which immediately come to mind are the 'Seven Minute Mind' (*Made Impossible*) by The Bad Plus (2012) and 'Abraham's New Gift' (*Green Delay*) by Phronesis. (2009)

Furthermore, Chris Potter, especially his work with Adam Rogers (guitar), Craig Taborn (Fender Rhodes) and Nate Smith (drums), likewise initially inspired the use of time signature changes and odd time signatures. The C section of 'Serpent Years' features a riff inspired by the B section in Chris Potter's 'Train' from *Follow the Red Line: Live at The Village Vanguard* (2007). While his section features a bar of 9/8 and a bar of 7/8, the

'Serpent Years' C section is made up of five bars of 4/4, a bar of 3/4 and a bar of 5/16. More similarly, it shares its straight rock feel and the same first four notes made up of a minor pentatonic. The score shows offbeat right-hand piano chords influenced by Craig Taborn's Fender Rhodes during the solo section of 'Train', but this was more effective on 'Train' because the time signature change switches the right-hand chords on and off the beat. We changed this on 'Serpent Years' because in this context it created a ska feel, sounding too alien to the rest of the album.

Various grooves and time-feels are present throughout the projects and significantly are sometimes inspired by hip-hop. Some examples of these are the time-feels of the A section of 'Horns of the Ram' and the final track, 'The Twins' from *Ikigai*. Moving to an example from *Fracture*, a hip-hop groove is also featured during the introduction of 'Reef Knot' (*TRACK 1*), where Reddin-Williams' groove is reminiscent of 90s hip hop collective A Tribe Called Quest and further emphasised by Sam Hobbs using distortion and compression in post-production.

Throughout the portfolio there are elements of humour, subtle cliché, and playfulness. Between the composed melodies of 'Horns of the Ram' (*TRACK 2, Ikigai*), there are phrases which derive either from freely improvising or interpretating the trill lines. I believe these lines are influenced by early musical encounters, such as the language of Carl Stalling in the American animated cartoon 'Loony Toons'. Likewise, I feel that the jazz funk theme tune from 'Hey Arnold' by Jim Lang influenced 'The Twins'. In a similar way, there are more cinematic influences present, such as during the A section of 'Serpent Years', which in addition to its Asian influences, features arco double bass and military-style snare rolls, the theme of military-style snare roles is also featured in the final sections of *Promise/Threat* (45:26).

During the subchapters on the 'in' to 'out', I describe some of the concepts which I have utilized inspired by Michael Brecker, George Garzone, Mark Turner and John Zorn, as well as the use of twelve tone rows, deriving from contemporary classical music. These can especially be witnessed throughout *Pebbles*. I've also included details about how I have been influenced by Indian music and my lessons with Jesse Bannister. Saxophonists John Coltrane, Joe Harriott and Dave Liebman are famous for incorporating Indian influences and the lineage has continued with contemporary players Jesse Bannister and Rudresh Mahanthappa. While Coltrane was influenced by Indian music in the early 60s,

the presence was not very literal (Clements, 2009, p. 156). In my portfolio, apart from Luke Wynter's riffs in 'High Tea' (*Fracture*) and my melodies and riffs in 'Dot Com Babel' (*New Devices*), I have taken a similar approach. Indian influenced ideas are generally quite subtle. More detail on this is explored in the 'Big Saw Jigsaw' case study commentary and the subchapter on Indian music.

Within the portfolio I have also aimed to expand on my general use of ornaments by incorporating the Indian gamaks which I explored in my lessons with Jesse Bannister. I've also worked on substituting notes within the ornaments/gamaks with Michael Brecker influenced alternative fingerings. Using alternative fingerings to attack notes before suddenly switching to standard notes was inspired by Pete Wareham, notably albums where his playing has especially influenced me are Acoustic Ladyland's *Living with a Tiger* (2009) and *Polar Bear's Held on the Tips of Fingers* (2005). A similar effect can be created by switching from a standard fingering to a harmonic of a different fingering, sounding the same pitch. This approach to playing can be especially heard during my solo on 'Three Pea Soup' (from 3:43, *TRACK 9*, *Fracture*).

Fracture especially involves pop influenced harmony and melody. 'High Tea' (*TRACK 4*) and 'Splinter' (*TRACK 7*) from *Fracture* involved chord progressions composed by Luke Wynter. These chord progressions feature pop influenced chord progressions. 'Splinter' consists of two sections. The A section chord progression is Bm7(11), Dmaj#11, Bm7(11), Cmaj, Gmaj and the B section chord progression is C G Am E. 'High Tea' features a standard I IV VI V (Dbmaj, Gbmaj, Bbm7, Ab7) progression. I reflected the pop influenced progressions by keeping my solos melodically and harmonically simplistic and 'in'. The solo during 'Splinter' (2:03), also features Charlie Parker influenced phrases and chromaticism.

3.4 LIMA

Taking influence from a variety of styles and traditions is a shared characteristic of Leeds' exciting jazz and improvised music scene. Leeds has an excellent history of jazz and improvised music, most influential to this portfolio is the Leeds Improvised Music Association (LIMA) who operated in the 2000s, with activity peaking in 2005. The members performed in various projects, including TrioVD, Geordie Approach, the Electric Dr M, Minghe Morte, IDST, Røyst Trio and more. When I arrived in Leeds, LIMA was dispersing, but some members are still based in or around the city. I am thrilled to feature two founder members in this portfolio, pianist Matthew Bourne on *The Earthworm's Eye* View and guitarist Chris Sharkey on *New Devices*. Additionally, Ray Kane, the maker of the film, *Promise/Threat,* had a vital role in the promotional materials, artwork, and music video production of various LIMA projects. Other LIMA members included Dave Kane, Christophe de Bezenac, Colin Sutton, Chris Bussey, Simon Kaylor, Simon Beddoe, Rus Pearson, Petter Fadness, Paul Hession and Kari Bleivik. Bourne, De Bezenac and Fadness hold doctorates and, in part, inspired me to continue onto postgraduate studies.

Frustratingly, LIMA is considerably under-documented compared to today's equivalents; it was a little too early for YouTube, easy access to mass digital distribution and platforms such as www.bandcamp.com. Even its Wikipedia page was deleted in 2014 by an online user who claimed it had 'barely any notable members', (Lukeno94, 2014) but some of the most individual music at the time came out of this exciting scene with critical acclaim - Bourne had already won the Perrier Award 2001 and the BBC Radio 3 innovation award 2002. (Leaf, 2009).

'The problem was that no one was listening… Few had developed a "name" for local or national media to take notice, and the local jazz clubs either found us too "weird" or regarded us as "unknowns," unable to pull in the punters'. (Fadness, 2015)

Turning the 'problem' into the most significant contributor to their success, they moved underground, building their own audience from scratch, performing in the back rooms of churches and pubs, they did not need to please promoters or audiences with aesthetic

expectations, Fadness explains 'there was automatically an **expectation** of a non-conformist expression'. The move meant that they were free to experiment and crossover with other genres such as thrash metal (Bussey, Sutton), contemporary classical (Kane), Gamelan (De Bezenac), performance with samples (Bourne, 2007) and folk (Røyst Trio).

3.5   COLLABORATION

This subchapter provides background on the collaborations which took place in the projects. *Solo* obviously didn't involve any collaboration, *Pebbles* can be summarised as a freely improvised duo album with pianist Johnny Richards and *Ikigai* is a quartet album where we play my compositions and improvise on its forms. The Tipping Point and Roller Trio albums are explored more in the following paragraphs.

I formed Tipping Point to play the compositions featured on *The Earthworm's Eye View* and initiated it with an intensive rehearsal residency followed by two performances: the Lescar in Sheffield and the Fusebox (Fox and Newt) in Leeds, after this we spent two days in the studio. During this time we developed the material and our approach to group improvisation, preparing us for the studio. The time allowed us to thoroughly internalise the written material so that we could freely explore it across the composition to improvisation continua.

Roller Trio was already a band prior to my PhD studies, a version of our first album was submitted as a project for my MA. Continuing into the PhD, Roller Trio's *Promise/Threat* involved three long improvisations to the silent film and editing them together in collaboration with producer Tim Thomas. Subsequently, Roller Trio started working on Fracture and the bulk of this album is generally made up of Wynter's guitar parts, my practice études and Reddin-Williams' intricate drumming. Amongst this was 'Mango' (*TRACK 8*), which I one of my compositions that I presented as a lead sheet, and multitracked improvisations 'Tracer' (*TRACK 6*) and 'Tightrope' (*TRACK 10*). The composed material was developed through hours of improvising, rehearsing, and reflecting on performances. Wynter's guitar parts in tunes such as 'Doris', 'High Tea', '2 Minutes to 12', and 'Splinter' were collaboratively structured, developed and augmented in rehearsal.

Many of the arrangements significantly involved the saxophone playing in unison with the top melody in the guitar.

After *Fracture,* Wynter moved to London and it was more difficult to rehearse. This led to Chris Sharkey joining for *New Devices*, the third Roller Trio project in the portfolio. *New Devices* started with sessions in the studio, improvising as an ensemble with sample packs Sharkey emailed to Reddin-Williams and me with suggested tempi. Typical of the Roller Trio process, we mostly composed/improvised our own parts. But sometimes, roles crossed over, e.g., Reddin-Williams playing the synth on 'Sever So Slightly', Sharkey heavily editing drums together on 'Milligrammar', and me programming the bass and electronics parts in 'Dot Come Babel'.

3.6 'THE COMPILER': PERSONNEL

'Jazz depends on its musicians to make it work… More so, even, than any composition' (Collier, 2009, p. 71).

In Graham Collier's book, *The Jazz Composer*, there is a subchapter with the heading, 'Duke the Compiler'. The chapter explores a moment when one of Duke Ellington's trombonists, Lawrence Brown, said to Ellington, 'I don't consider you a composer… You are a compiler.' According to Collier, this angered Ellington. Collier comments on Ellington's reaction, saying 'if he had thought about it more, he would have realised that it was a compliment', and later states that Ellington is 'a true jazz composer… Someone who *of* necessity compiles his music using the talents around him'. (Collier, 2009, p. 73).

In light of this story and Collier's comments, this chapter provides background on the ensemble's personnel and our musical relationships. The extra context intends to shed light on the projects' outcomes, or on a smaller scale, specific moments during improvisation. There are many moments in this portfolio where improvisation and collaboration have created ideas unimaginable. An example of how the 'magic' moments might manifest, is a situation where two people simultaneously improvise contrasting or what one might consider clashing ideas. Unless these ideas are abandoned, which would go against the nature of spontaneous composition and could be detrimental to a public performance, the

improvisers need to find ways of making the situation work, using the ideas to interact with each other and gradually evolve into something else.

All the projects feature LCoM graduates who are still active on the local jazz scene. Focussing firstly on Tipping Point, Bardon, Hendrickx, and I had played together in many different situations, from intense free jazz gigs to background music at weddings. We had studied with Bourne at LCoM and become active on the Leeds scene, collaborating on many projects, e.g., Chris Sharkey's 'Tokyo Doorbells'. Bardon and Hendrickx were already collaborating within band called Shatner's Bassoon, and Bourne and Hendrickx had also played in Dave Kane's *Rabbit Project* (2009). As fans of Bourne's work, it was inspiring to involve him on *The Earthworm's Eye View*, and the collective interests amongst the band inspired my writing and helped envisage the outcomes of the improvisation.

Turning to *Ikigai*, before recording, I had played with the individual members separately but not in this particular line-up. Like Tipping Point, because I already knew the members' playing styles and approaches, I had positive presuppositions of how the ensemble might interact. Double bassist Sam Jackson and I met at various gigs and jam sessions in Leeds over the past eight years, the project started with us playing as a duo before expanding into a quartet. Steve Hanley has an incredibly focused and individual approach to contemporary jazz drums. Hanley and I had mostly played together by chance at jam sessions but always spoke about collaborating. Pianist Johnny Richards (who is also featured on *Pebbles*) is highly interactive and open-minded, he has studied jazz but is more associated with the experimental music scene, performing with his projects Shatners Bassoon, Epic Toe Birth and as a side-man with Sean Noonan and Craig Scott's Lobotomy.

Regarding Roller Trio, the origins and developments are discussed in the previous chapter and throughout the commentary. A final relevant point to this chapter is that in addition to jazz and improvised music, Indian music is a shared interest with Wynter, Bardon, and Hendrickx, who have also studied with Jesse Bannister.

4. GENERAL TECHNIQUES

4.1 IMPROVISATION

3.1.1 PROVIDING OBSTACLES: USING CREATIVE LIMITATIONS TO FOCUS AND DEVELOP MATERIAL

'..my freedom will be so much the greater and more meaningful the more narrowly I limit my field of action and the more I surround myself with obstacles' (Stravinsky, 1947, p. 65)

Using creative limitations has been useful for both composition and improvisation. During improvisation, the concepts help to extend and develop limited material over a longer period, to make it sound cohesive and tell a story. This chapter provides examples of how creative limitations are utilised throughout the portfolio.

The composition to improvisation continuum is the most obvious way to exercise this concept in the portfolio. In addition to how the A sections of 'Big Saw Jigsaw' (*TRACK 5, The Earthworm's Eye View*) are limited to improvising with a row of notes, which I explored in-depth during chapter 1, another key example of where I have indicated creative limitations in the lead sheets is during bar 22 of 'Serpent Years' (*TRACK 3, Ikigai*). This bar contains boxed material, shown below in figure 15. The box contains material for the ensemble to improvise freely with before I cue the next section.

Figure 15: bar 22 in 'Serpent Years' (*TRACK 3, Ikigai*).

Similarly, for the different chapters of the silent film *Promise/Threat* there were different creative limitations. While recording, we watched the film on screens, and to visually

signal Roller Trio to change limitation for the different scenes, I superimposed countdowns onto the film.

During improvisation I like to think of a creative limitation as an anchor to play 'in' and 'out' of. Some of the clearest examples of anchors can be heard during *The Earthworm's Eye View,* especially at the beginning of my solos in 'Rat Bucket' (*TRACK 3*) and 'Big Saw Jigsaw' (*TRACK 5*) where the anchors are pedal notes which are interrupted with fast phrases. A clear example of the ensemble collectively utilising constraints is during the opening free improvisation 'Playtime' (*TRACK 1*). All band members chose an idea to execute and repeat with slight variations. Bardon loops a riff, Hendrickx only uses cymbal scrapes, Bourne sticks to sparse clusters, and I focus on repeating and developing one melody.

The role of a soloist can also influence different creative limitations. In *Ikigai* and *Fracture*, the role is quite traditional, the rhythm section accompanies and clearly states the form; the interaction is minimal and only serves to accompany the solo. In contrast, in *Pebbles, The Earthworm's Eye View,* and *Promise/Threat*, the role is more to lead the improvisation. The other members can choose to what extent they would like to impose or challenge, at one extreme taking an accompanying role, or at the other musically suggest different directions.

Sometimes, creative limitations would come about during improvisation, and during rehearsals or while reflecting on performances, we fixed them as or within compositions. A large part of the process in developing *Fracture* involved this. The more time we spent rehearsing, improvising, and discussing; the more fixed the elements of the tunes became. Even some of the motifs in the solos became fixed, sometimes being used to cue the next sections. After many gigs leading up to the recording, the length and shapes of solos likewise became fixed. One example of this is at 2:10 in '2 Minutes to 12' (*TRACK 5*), this melody was initially meant to be an improvised solo, but the more times it was played over months, the more limitations I put on it. Melodically it narrowed, settling with a 1 b3 4 5 shape, introducing the b6 and resolving on the major 3rd with the guitar harmony, following this process the rhythm was also fixed. Similarly, but going through the process much faster, during the recording of the 'Twins' (*TRACK 4, Ikigai*), I improvised an introduction which utilised the arpeggiation of the chord changes. After the first take, I

discussed with Richards (piano) to join in unison for the second repetition, which permanently became part of the composition.

Setting a creative limitation is an effective way to generate contrasting material. It can become part of an ensemble's improvisational language. During the recording of the freely improvised tracks on *The Earthworm's Eye View*, we wanted to maximise the range of material while we were in the studio, we did this by briefly sharing ideas before playing, one example was before 'For Linear Park', (*TRACK 8*) when Hendrickx suggested we played something as "loud and intense as possible where we all go for it".

Similar to this is how we organised the improvisation in *Promise/Threat*. While improvising to the film, it was important to use the creative limitations to balance interaction with what was on screen with what was going on in the band. The film's director, Ray Kane, provided me with a list of themes for each chapter, which we devised a set of creative limitations for. One example of assigning creative limitations to interpret the themes is during 'Fount', (*TRACK 1*) where we used a major scale to freely improvise and represent the mother's love for the protagonist. Another example is during 'Jellybean', (*TRACK 3*) where we have introduced a more unsettling set of techniques to represent puberty, growth, love, and loss. I used four techniques, these were a multiphonic, a low stab, teeth squeals and a repeated lip bend in the midrange. In contrast to setting the creative limitations in advanced, during the recording of *Pebbles*, Richards and I improvised sets of creative limitations for each track. This created some interesting combinations which would have been unlikely arranged in advance.

3.1.2 MELODIC DEVELOPMENT TECHNIQUES (EXAMPLES FROM *FRACTURE*)

This subchapter explores the melodic development techniques I have used throughout the portfolio using examples from *Fracture*. The main melodic techniques I think about during improvisation are repetition with slight modifications, diminution, augmentation and leaving space. Another technique is repeating an idea within a specific note range and interrupting it with notes from outside of it. This is also an 'in' to 'out' technique and featured in the 'Big Saw Jigsaw' commentary.

From 2:10, I begin my solo on 'Reef Knot' (*TRACK 1*) sparsely, playing one note per bar for two bars, then referencing material from the head, I quote the main riff before rhythmically diminishing it as demisemiquavers. Similarly, during the saxophone solo on 'Doris' (*TRACK 2*), where all individual phrases are repeated at least once with slight developments, Wynter and Reddin-Williams provide me with ample time and space to develop ideas which build towards 5:18 as the solo peaks. During this solo, I regularly quote the tune's melody and repeat it with minor modifications by introducing or changing one note at a time. Sometimes the newly introduced notes are 'out' of the harmony and are used to link phrases together. Another track from this album which demonstrates similar motivic development techniques is 'Three Pea Soup' (*TRACK 9*). The solo starts at 2:32 and utilises repetition and space. On the second chorus, the space allows me to double up the bass between phrases. This solo also demonstrates another area of melodic development explored in this portfolio, which is repeating ideas within a specific note range while interrupting and developing ideas outside of it. I use this technique during the rubato phrases over the last chord of the 1st solo section at 2:54-3:11 and again at 3:31.

3.1.3   SHOWING YOUR WORKING OUT, WELCOMING AND USING MISTAKES

This chapter provides examples of moments throughout the portfolio where the music includes the process of finding and settling on an idea, or the making and integration of a mistake. As an improviser, it is important to learn how to accept, and incorporate mistakes during improvisation, as Miles Davis famously said, 'do not fear mistakes – there are none' (Bertinetto, 2016).

To further explain the finding and settling on an idea, or 'showing your working out', sometimes, during improvisation, it can take a while for a strong idea to form, but the exploration in search of this idea can create an interesting narrative. There are some examples of this happening in *The Earthworm's Eye View*, especially during the improvised tracks such as 'Robin Stood as a Robin Hood Should' (0:00-0:53, *TRACK 4*), where there is a gradual transition from the opening texture to a two-chord progressions.

This paragraph includes two examples of where a mistake became an effective structuring device. Firstly, while recording 'Reef Knot' *(TRACK 1, Fracture)*, at 3:59, Reddin-Williams drops a drumstick causing the cymbals to cut out. When overdubbing my solo, I filled the unexpected increase of space by creating a phrase built-up of overtones from the saxophone bell keys. The outcome of this recording led us to recreating it during our live performances (without actually dropping the sticks, of course). Secondly, during the recording of 'Rat Bucket' (*TRACK 3, The Earthworm's Eye View)*, I would normally cue the head-out (10:00), but on this occasion, I did not indicate to the rest of the band that I was about to start playing the melody, which did not provide them with enough time to tastefully transition to the head. This resulted in them finding material which fused their improvised material with the composed material. Bourne continued by repeating the same cluster chord which he had been playing and loosely referred to the rhythm of the melody, Hendrickx continued and faded until the end, and Bardon freely repeated a group of notes taken from the melody. This created a unique and complex ending and avoided a distracting and sudden texture change which would have felt forced.

3.1.4   LAUNCHPADS AND IMPROVISING WITH WRITTEN MATERIAL

The 'Rat Bucket' example explored at the end of the previous subchapter is also an example of one of the many ways that written material can be improvised with. Exploring the composition to improvisation continua, during many of the tracks, the compositions act as launchpads for improvisation. The material can inspire improvisation, or provide source material, or a form. This is explored in-depth regarding 'Big Saw Jigsaw' in its commentary for the listener-reader, but also, this subchapter includes more examples from various tracks in the portfolio. Throughout the portfolio, tracks on *Ikigai*, some of the tracks on *Fracture* and *New Devices*, and 'Rat Bucket' (*TRACK 3, The Earthworm's Eye View*), feature the tried and tested head-solo-head arrangement. The rest of the tracks are either through-composed, head-improvisation, improvisation-head or fully improvised.

Before moving on to the examples, this paragraph notes the nature of the lead sheets. In line with a common approach to composing for jazz musicians, the lead sheets involve chord symbols instead of notated voicings, and for the drum parts, instead of notated intricate grooves, I usually create parts which mix melodies, backings, and descriptions of approaches/time-feels. This was to encourage creative input and keep the parts open for the musicians to interpret.

'Equanimity' (*TRACK 2, The Earthworm's Eye View)* is an example of an improvisation-head arrangement. The first section of the track (0:00-3:40) combines free time improvisation, hinting at the head's melody and harmony before transitioning to the composition in full. The transition is created by firstly introducing a pulse and quoting segments of the last two bars of the melody, then while repeating the two bar melody in full, the rest of the band gradually joins in with the composed material. Once everyone settles on the riff, I then cue the head which we play as written. Similarly, for 'Doris' (*TRACK 2, Fracture*), I use the A section melody to cue the transition from my solo into the next section (5:33). It is also common to quote ideas from the head during solos, this regularly happens in the portfolio, e.g., the saxophone in 'Doris' at 3:13 and in 'Rat Bucket' at 8:26.

To summarise what is happening in the A section of 'Big Saw Jigsaw', while improvising, we cycle the A section's form while hinting at written material. Roller Trio uses a similar

concept during 'Mango' (*TRACK 8, Fracture*) at 1:45 where Wynter and I keep the form of a riff while interacting by only playing segments.

The portfolio also includes several examples of using gesture to cue melodic cells. E.g., the repeated melody during 'Crawler' (*TRACK 2*, *Promise/Threat*) and the coda of 'Horns of the Ram' (10:26, *TRACK 2*, *Ikigai*), the phrases are split into cells and I cue each one separately. The figure below shows the coda from 'Horns of the Ram' (10:26, *TRACK 2*, *Ikigai*). I cued the notes individually, except the group of four demisemiquavers which I cued as a group. The end of the final note is also cued. Purposely making the cues hesitant can be used to create more complexity; 'Crawler' implements this to reflect one of the film chapter's themes, which is a clumsy toddler.

Figure 16 shows the 'Horns of the Ram' coda (10:26, *TRACK 2*, *Ikigai*)

3.1.5 BEBOP SCALES, ENCLOSURES, PATTERNS, MODES AND HEMIOLAS

Throughout the portfolio I have continued to incorporate bebop scales, enclosures, patterns, and hemiolas into my solos, both influenced by past transcriptions, and exercise books such as Pete Thomas's *Taming the Saxophone Volume III: Intermediate and Advanced Exercises and Patterns* (Thomas, 2007). All recordings, apart from several tracks on *Solo,* feature these melodic devices.

In a similar way to how bebop scales are devised, which is usually by adding a chromatic passing note to a heptatonic scale, to create consonant lines, it is common to play chromatic passages but avoid chromatic passing notes of the chord scale landing on the strong beats. To provide an example from my portfolio, a motifs during my solo on 'Ikigai' (e.g. 4:40), is made up of the notes: D, C#, C, B, Bb, A, G, F#, F, avoiding the Ab.

An example of a lower neighbour note pattern is shown below. For the use of enclosures, there are various examples in 'Reef Knot', e.g., the altissimo E, at 3:23 (*TRACK 1, Fracture*). More examples from 'Reef Knot' come later in this subchapter.

Figure 17: Chromatic pattern during 'Ikigai' (3:58, TRACK 1, *Ikigai*) transposed for tenor saxophone.

As well as general scale to chord relationships, modes can also be switched between and superimposed onto improvised tracks where harmony is not the focus of the improvisation – creating contrast using their harmonic characteristics. Most of the tracks in the portfolio involve modal composition or improvisation to an extent. At points in some of the compositions, modes are the only element which reconciles the improvisors, such as in 'Serpent Years' (1:43, *TRACK 3, Ikigai*), where, as notated in the lead sheet, there is a transitioning section which instructs the band to improvise with D Dorian as the only constraint. As previously mentioned, the opening of *Promise/Threat* ('Fount', *TRACK 1*)

features an Ionian improvisation over a drone, almost in the style of an alap. The plan for the improvisation following the head of 'Breathe' (*TRACK 6, The Earthworm's Eye View*), was to improvise using the Lydian scale, but we explored the 'in' to 'out' by introducing other harmony and detuning delays set with high feedback. While modes and Indian scales are extensive during improvisations, as a stylistic choice, the harmony of the compositions mostly involve modes derivative of the major and melodic minor scales. However, there are pieces across the portfolio which involve the Phrygian dominant scale (fourth mode of the harmonic minor. These are 'Playtime' (*TRACK 1*), 'Rat Bucket' (*TRACK 3*) from *The Earthworm's Eye View* and Wynter's main riff and tihai of 'High Tea' (*TRACK 4, Fracture*).

There are many ways which the ensembles interact rhythmically, the final paragraphs of this subchapter touch on this by using examples of hemiolas in 'Reef Knot' (*TRACK 1, Fracture*). Hemiolas are useful for creating tension and inviting the rest of the band to interact, interesting results are also created by simultaneously outlining harmonic changes. In 'Reef Knot', which involve the superimposing of 3/8 rhythms over bars of 7/4, are a theme throughout the saxophone solo. As notated below, at 2:42, I start the bar with two quavers followed by four groups of three, the notes are grouped by sharing a descending contour, and because there are fourteen quavers in total, they resolve on beat one of the next bar, shown below.

Figure 18: 'Reef Knot' hemiola, 2:42 (*Fracture*)

At 3:06 I start another 3/8 hemiola on the 2nd quaver of beat four – repeating it seven times and another two times after a quaver rest, changing with the chords in ascending patterns.

Figure 19: 'Reef Knot' hemiola, 2:42 (*Fracture*)

I continue with hemiolas throughout the 'Reef Knot' solo, especially using dotted crotchets, which build momentum towards the solo's peak. An example where the device has encouraged interaction occurs at 3:53 between the saxophone and drums, where we play four crotchets at the start of the bar and a 3/8 hemiola (two semiquavers followed by a semiquaver rest) over the remaining three beats.

3.1.6 INDIAN MUSIC

This chapter aims to provide background on how an introduction to Indian Classical Music techniques influenced my approach to composition and improvisation during the portfolio. Between recording *Promise/Threat* and *The Earthworm's Eye View*, I was taking lessons with North Indian Classical saxophonist Jesse Bannister, and I attended an Indian music summer school organised by SAA UK. Jesse introduced me to Indian ragas, rhythms, gamaks and his approach to transferring bansuri flute techniques to the saxophone. The following paragraphs explore some of the techniques.

Glissandos

Similar to how a bansuri flautist uses a finger to gradually cover the holes, Bannister drew my awareness to slowly opening and closing keys on the saxophone. Up to this point, I had mainly used my bottom lip to control glissandos (increasing and decreasing pressure on the reed). As well as the examples mentioned in the 'Enthusela' commentary in chapter 1, the difference can be heard when comparing the glissandos of 'Fount' (*TRACK 1, Promise/Threat*), where I use my lip, to 'Playtime' (*TRACK 1, Earthworm's Eye View*), where I use my fingers. The outcome is a much subtler change in timbre and more

consistent dynamics. Aiding agility, the exercise also encourages the fingers to stay as close to the keys as possible.

Ragas

Admittedly, before these lessons, I had mostly focussed on western modes derivative of the major, harmonic minor, melodic minor scales, and symmetrical scales augmented, diminished, and whole tone. One raga which Bannister shared with me was from Hindustani classical music, called the Multani (Figure 19). Starting with the 7th (ni), it ascends as a pentatonic and descends with the scale in full. To draw a comparison with a western scale, the Multani is like the harmonic minor scale but with a #4 and b2 (Parrikar, 2002). I found that the raga suited the saxophone when having Sa as D (see Figure 20), as well as it fitting well with the saxophone's range, it also physically allowed for glissando techniques in tonally effective areas. Such as from middle C# to a side-key fingered D (an alternative fingering of the standard middle D fingering). Another raga I utilised was des. Similarly, Des (Parrikar, 2001), is pentatonic when ascending and heptatonic when descending (shown in figure 20), and again, when comparing to western scales, is Ionian when ascending and Mixolydian when descending.

Figure 20: Multani

Figure 21: Des

The Alap

In conjunction with ragas, with Bannister, I explored the alap (ālāp). The alap involves improvisation which gradually introduces a raga, sometimes by starting with one note and adding more, stretching material over an extended period. As a lesson in melodic

development technique and pacing, it naturally became part of my overall approach to improvisation. Practising the alap involved playing over a tempura drone for up to fifteen minutes. This was challenging with respect to both the discipline and focus it takes to simultaneously abide by the gamak and inter-raga movement rules.

Multipurpose Practice

Bannister also showed me a multipurpose approach to practice from the Indian music tradition. The exercises simultaneously help to practice ragas, articulation, time awareness, note groupings, gamaks, and breathing (for wind instrumentalists and singers). With regards to breathing, this approach involves playing as much of the exercise as possible in one breath, then when needing to inhale, which should be full, natural inhale, the fingers continue moving on the keys, keeping the exercise uninterrupted.

Figure 21 shows an example of a Multani multipurpose exercise. Made up of quavers, it changes time signature every bar by adding a note to each repetition. The articulation involves tonguing in groups of twos or threes, always accenting the first note in a bar. Fig. 22 features another example, with Des. This example descends while adding a note to each repetition. Generally, as well as a useful technical exercise, I believe this approach can be, in some cases, more efficient than practising the elements separately.

Figure 22: Multani Multipurpose Exercise (after Bannister)

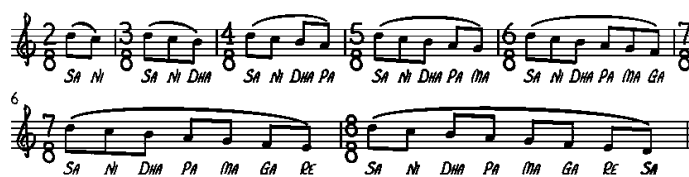Figure 23: Descending Des Multipurpose Exercise (after Bannister)

Figure 24: Gamak Exercise (after Bannister)

As well as efficacy, while I think it is helpful to enjoy or carry the discipline to practise technical attributes in isolation, I believe this exercise also has the scope to engage people who might struggle with that. When designing original exercises, because of the sheer variety available and the creative process involved; a person could practise the same raga with a different exercise every day while still experiencing the gradual benefits. Rhythmically, an example of an exercise which was both been beneficial and engaging at my current technical ability, is the playing of a phrase once, repeating it twice at double-time, once at single-time, then three times in triplet-time. While gradually increased the tempi, the exercise remained challenging at various speeds.

As mentioned at the end of chapter 3.3 Wider Context, the Indian influences in my portfolio are mostly subtle, but some clear examples are the melody in 'Playtime' (*TRACK 1*, *The Earthworm's Eye View*) which contains ornamental, glissando and rhythmical influences; as mentioned in the 'Big Saw Jigsaw' commentary, the beginning of the saxophone solo of 'Big Saw Jigsaw' (3:02 *TRACK 5*, *The Earthworm's Eye View*) incorporates the Multani and exercise influenced melodies; 'Armley Days' (*TRACK 9*, *Solo*) and 'Armley Days 2' (*TRACK 10*, *Solo*) are pieces both based on drones containing Indian style improvisation, with 'Armley Days' featuring an alap based on des.

Tihai

One of Wynter's composed melodies in 'High Tea' (*TRACK 4, Fracture*) is based on a tihai (and is where the title of the piece comes from). A tihai is a polyrhythmic cadence made up of the same phrase (which is a different length to the number of beats in a bar) repeated three times. The tihai in 'High Tea' (notated in figure 25 on the next page), can be heard at 0:27 and at 3:21 leading into the main riffs. Finally, in a similar way to designing personal multipurpose exercises, ragas also inspired me to experiment by forming scales myself – changing one or a small selection of notes in the scales I already used and avoiding western modes.

Figure 25: Tihai in 'High Tea'

3.2 COMPOSITION

3.2.1 EMBELLISHING SIMPLE TUNES WITH ODD TIME SIGNATURES, FREQUENT TIME SIGNATURE CHANGES AND REHARMONIZATION

This subchapter outlines a selection of composition techniques which I have used throughout the portfolio. The techniques include embellishing simple melodies, odd time signatures, frequent time signature changes and jazz-influenced harmony and chord changes. The techniques are displayed in the lead sheets for 'Equanimity', 'Breathe', and 'Big Saw Jigsaw' from *The Earthworm's Eye View*; 'Mango' from *Fracture*, and 'Ikigai', 'Serpent Years', and the B section of 'Horns of the Ram' from *Ikigai*. I also used them when composing the main melodies in *New Devices,* such as 'Decline of Northern Civilisation' and 'Nobody Wants to Run the World'. To create memorable melodies, with the approach I aim to keep simple melodies distinct from their counterparts while adding complexity and detail in-between.

There was no set melodic and harmonic writing process. Sometimes I would first develop a chord sequence and write a simple melody based on the chord tones (especially the chord extensions) or write a melody and harmonize it in different ways until I found a suitable chord sequence. Amongst simple melodic embellishment techniques such as chromatic enclosure and chromaticism, much of the embellishments came from producing countermelodies which are more complicated and are played between phrases of the main melody. The melodies are then developed through diminution or augmentation into different length bars and transposed into different keys, a technique especially evident in 'Equanimity' *(TRACK 2, The Earthworm's Eye View)* and 'Mango' *(TRACK 8, Fracture)*.

For 'Serpent Years' (*TRACK 3, Ikigai*), I initially wrote the simple melody heard in the right hand of the piano part, in 4/4, but then altered it to fit into bars of 7/8 and 10/8. Following this I composed a more embellished version of it in the saxophone part. 'Breathe' (*TRACK 6*, *The Earthworm's Eye View*) features further development techniques and, relative to the other pieces relevant to this chapter, is alone in how it features delayed attacks and anticipations in the melody. The reason why the other tracks do not feature the delayed attacks and anticipations was so that they highlight the time signature changes more clearly. In contrast, it felt appropriate to do this on 'Breathe' where the nineteen-bar

head is repeated twice, and the melody is substantially syncopated during the second repeat, with added augmentations, notes and extended intervals.

While preparing to record *Fracture*, I wanted to generate something complex among the grooves and riffs. As well as bringing études and composing 'Mango', the middle section of 'Three Pea Soup' (1:44, *TRACK 9*) evolved by using a simple substitution cypher from the letters that make up the band name. As shown in the table below, each letter's numeral position in the alphabet became the number of semiquavers in bars or groups of bars. Using the same modes from the sections before, we jammed the bass notes of the chords, and after the rehearsal, I composed the melody shown in figure 27 on the next page. The resulting melody was also used during the section before but rhythmically adapted to fit into 4/4 and articulated differently to synchronise with the groove.

Figure 26: Substitution Cypher

Letter	R	O	L	L	E	R
Number in alphabet/number of semiquavers	18	15	12	12	5	18
Bars numbers (in fig. 8)	1	2-3	4-6		7	8

Fig. 27 Three Pea Soup Excerpt

3.2.2   FROM EXERCISE TO ALBUM TRACK: SHARING AND DEVELOPING ÉTUDES

In addition to expanding my vocabulary for improvisation with material taken from books and transcriptions, I also compose lines and études that simultaneously technically challenge me and intend to be something more personal. I would then share these ideas during rehearsals, sometimes as a conscious decision or sometimes organically during improvisation which we would then repeat (jam) and make part of a composition. The lines and études I composed would often utilise the approaches mentioned in the previous chapters; especially writing a simple melody with fast countermelodies where there is space. In addition to the speed, the countermelodies often leap to a different saxophone range, contrasting both the pitch and timbre.

An example of this process is the riff at 1:12 during 'Reef Knot' (*TRACK 1, Fracture*). This riff was one of many variations which I used to practise accompanying melodies in the second register with lower register notes. Because of the leap to the lower notes, they require heavier articulation, which results in accented bottom notes and a legato top-line. I also wrote exercises like this to help internalise multiple rhythmic groupings of notes, hoping to incorporate them into my improvisation. 'Reef Knot' is in 7/4 and the riff is made up of quaver triplets in groups of five, with the final note in the bar as a crotchet triplet.

Figure 29: 'Reef Knot' saxophone melody.

In a similar way to how we improvise with the A sections of 'Big Saw Jigsaw' and riff at 1:45 in 'Mango' where the form of the riff cycles but we only play segments of them,

during rehearsal we tried different combinations of the notes in this riff. One of these included using the low notes to form a new riff (0:49, notated in figure 30).

Figure 30:

Another example is the melody which we formed by only playing the notes which land on crotchet beats. This is played by the guitar at 1:23 while the saxophone plays the riff in full, then the guitar and saxophone swap the melodies - so the saxophone plays the crotchets while the guitar plays the original riff.

Figure 31:

During the solo, at 2:29, I use a more intricately embellished version of the line which derived from these exercises. It use the notes in figure 31 with a repeated semiquaver countermelody.

Figure 32:

Likewise, the opening melodies of 'Serpent Years' (*TRACK 4, Ikigai*) and 'Big Saw Jigsaw' (*TRACK 5, The Earthworm's Eye View*) also explore saxophone self-accompaniment by splitting the range and accenting the lower register notes, more distinctively, they explore the percussive articulation produced when leaping to the saxophone's bell keys.

While attempting to expand my rhythmic vocabulary, I also wrote a series of rhythms which explore different orders of crotchets, dotted quavers, quavers, semiquavers, and semiquaver triplets. One of which became the foundation of 'Tight Rope' (*TRACK 10, Fracture*).

Figure 33: Bass drum pattern in 'Tight Rope'.

The A section of 'Ikigai' also derives from exercises to help integrate notes from the altissimo register within my melodic lines. Wynter also used a similar approach when writing some of his parts for *Fracture,* exploring self-accompanying, multiple guitar melodies and riffs which could be played simultaneously.

3.2.3   CONTRAST AND REPETITION

This subchapter documents notable examples of contrast and repetition which do not fall under the previous subchapter headings. It includes harmonic considerations from *Ikigai*, an example of an arrangement technique from *Fracture*, examples of melodic transposition, the use of note groupings and permutations, and instrumentation and texture.

Harmony has obviously been a useful way to create contrast within repeated sections. To provide an example of this, during 'Ikigai' *(TRACK 1, Ikigai)*, the chord changes are Gm9, Eb6/9, F7 and Gm9, with the last substituted with an Eb7#11 during the second time bar to better transition to the next section. The mode only changes one note (D to Db) creating a tritone substitution of an A7 which would harmonically lead to the first chord in the A section – Dm7. Having the Eb in the bass is familiar to the listener as it is featured already in the intro, it also gives it a chromatic step down to the Dm7. The melody can be split up into three phrases, with the second one repeated over a different chord. The three phrases together are then repeated with slight variations to give it forward motion, and the fourth time it is played with the final note changed to Db – the 7th of the Eb7. This note is also played more dramatically over the chord substitution to lead it to the next section.

Subtler changes to harmony are also useful in balancing contrast and repetition. To continue with examples from *Ikigai,* in 'Horns of the Ram' (*TRACK 2*) the chords are Bbm7 and G7#4 but sometimes the Bbm7 changes to a Bbm(maj7) to accompany the melodic changes. The 'Horns of the Ram' B section is based mostly on C Lydian which only changes by introducing an Eb natural in the Am7(b5) and Eb7(#9), replacing the E and suggesting the blues. The Eb7(#9) also implies b9, #11, making the chord scale a half-whole diminished scale. The final chord introduces C harmonic major.

Continuing with examples from *Ikigai*, the first two bars of 'Serpent years' repeat over a Gm9/F chord with the double bass bowing an F, I repeat the next two bars with the last three quaver beats modified while the harmony changes to Abmaj7#4. This modification results in the reharmonization of the first note (D) becoming the #4 of the Abmaj7, which previously was the 4th on the Gm chord. The A section diminishes the length of the two bars into 7/8 and uses the same melodic ideas but uses accidentals to fit with Bbm9, Ab6, Bbmaj7(#4) and A7(b9). The first note is C, which starts as the 9th of the Bbm9 chords and becomes the #4 of the Gbmaj7 chord, then the #9 of the A7. Opposite to reharmonization,

sometimes the melody is modified to fit over different chords while keeping the same contour. E.g. the C section of 'Serpent Years' repeats a two-bar riff and is adjusted to move with the chords: Dm7, Ebmaj7#4, Dm7, Fmaj7#4, Em9(b5), then Bbm(maj7) over a bar of 3/4 and a bar of 5/16 before repeating the full section. The D section is made up of material from C transposed up a minor 3rd and rhythmically diminished into six bars of 7/8– changing the first note in the bars of 7/8 to a quaver rather than a crotchet. I then changed the 3/4 bar to a 5/8 bar and the 5/16 bar into the same intervals and rhythm but in boxed material (instructing the reader to use the boxed material as material to improvise with).

Regarding arrangement, this paragraph explores an example from 'Mango' (*TRACK 8, Fracture*). It features a head which is repeated twice with Reddin-Williams sparsely using mallets the first time and with more detail and time-feel clarification the second time. During the rehearsal of the written material, we looped segments of the head, one of the loops was bars 7-8. This loop stood out as something that could be used on its own and therefore it became a new form which we used for the section starting at 1:46. We loop it as written, with the same rhythm and time signatures, but alter the harmony and change the key centre to Dm (previously based on Ebmaj7).

Another device relevant to this chapter is transposition. E.g., during the B section of 'Twins' (1:32 – 1:42) where the melody is transposed down a tone accompanied by a series of Lydian chords. For 'Milligrammar' (*TRACK 2, New Devices*), I used note groupings and improvised different permutations to generate material and create contrast.

Figure 34: Soprano melody in 'Milligrammar'

Changing instrumentation and texture is also used to create contrast amongst repeated sections. Clear examples in the portfolio include the layering of parts in 'Mad Dryad'

(*TRACK 4*, *New Devices*) and the piano breakdown before the C section of 'Horns of the Ram'. An example is also in *Pebbles*, during '2' (*TRACK 2*, *Pebbles*), where we switch between two contrasting textures, one made up of unison trill and staccato wide-leaps on the piano, while I use percussive extended techniques such as slap tonguing and teeth squeals, we use these ideas to chase each other's intensity and finish phrases at the same time.

3.2.4   RELENTLESS RIFFS

This subchapter explores the functions of various riffs in the portfolio. Riffs can be used sparsely or as the focus of an entire piece. An example of a riff which became the focus of the entire piece, is the title track from *The Earthworm's Eye View* (*TRACK 7*). Shown in figure 35 below, the riff is in 11/8 and the four bars are repeated two and a half times to create a form. The form is repeated throughout the piece, and the riff is played with slight variations in articulation, embellished with improvisation, and effects processed both live and during post-production.

Figure 35: riff from 'The Earthworm's Eye View' (*TRACK 7*)

Variations of the same riff with harmonic changes are also explored. E.g., 'Three Pea Soup' (*TRACK 9, Fracture*) opens with a series of funk grooves and repeated riffs which derive from jams in rehearsals. With similar melodic ideas based around two sections, the A section is based on Abm and the B section on Emaj#11. From 3:43 till the end, there are

more repeated riffs which were developed in rehearsals, all based around B major and structured into a form to accompany saxophone solos.

Figure 36: Riff from 'High Tea' by Luke Wynter.

When riffs emerge without the addition of chord voicings, I go through the process of harmonising the riff based on the harmony it suggests. Wynter's riff in 'High Tea' (*TRACK 4*, *Fracture,* 0 - 1:04) is an example of where this took place. Notated above in figure 36, it suggests a bar of Dbmaj and a bar splitting Fmaj and Gbmaj. The B section (1:04 – 1:32) is made up of a repeated Bb minor pentatonic melody over the chords shown below in 5/4:

||Bbm7 |Ab   Db |Gb |Gb   Gm7b5|Bbm7 |Ab   Db |Eb7 | G#7/C ||

Another technique was to repeat riffs which are static while other parts move. The saxophone riff which I composed for 'Decline of Northern Civilisation' (0:34, *TRACK 1, New Devices*) repeats over the gradual builds of Sharkey's electronics and Reddin-Williams drum grooves.

Figure 37: Riff from 'Decline of Northern Civilisation' (0:34)

Riffs which grow out of improvisation can sound organic and relating back to chapter 3.1.3 Showing Your Working Out, can create interesting narratives. Among many examples of riffs during *Promise/Threat*, 'Stooge' (*TRACK 4*) contains a clear, unison riff, formed within free improvisation. It emerges out of Reddin-Williams' 7/8 groove which he gradually found while repeating patterns on the toms, it solidifies at around 3:22, then the guitar enters (3:48) and they progressively builds to stabs.

3.2.5 MATHS: THE USE OF METRIC MODULATIONS, POLYRHYTHMS AND CROSS-RHYTHMS

In addition to time signature changes and the various rhythmic techniques discussed in the commentary so far, a significant feature of much of the material is the use of metric modulations, tempo changes, polyrhythms, and cross-rhythms.

This paragraph includes some examples from *Fracture.* An example of changing time-signature, from double-time to half-time, and while simultaneously moving from swing to straight feel, occurs at 1:43 of 'Three Pea Soup' (*TRACK 9*). There are also some more complex and challenging devices; sometimes a rhythmic device is only executed approximately. E.g. at 0:48 of 'Reef Knot' where a crotchet becomes equal to five quaver triplets (in the new time signature 7/4), this means the hits which we initially felt as crotchets become the 1st, 6th, 11th, and 16th quaver triplets, which aim to be spaced at approximately the same speed. To document a tempo change, the final head of 'Mango' (*TRACK 8*), is substantially faster than the opening head, which makes it sound more energetic and aggressive than the opening. I use the term aggressive, mostly because of how the new tempo forces me to articulate the lower notes of the saxophone much harder.

Figure 38: '2 Minutes to 12' (*TRACK 5, Fracture*) Excerpt.

This paragraph provides three examples of where the portfolio explores rhythmic displacement, reduction, and expansion. Displacement occurs in the opening riff to 'Doris' (*TRACK 2*, *Fracture*) where it is repeated a quaver later. The final section of 'Equanimity' (3:40, *TRACK 2, The Earthworm's Eye View*) concludes by reducing the riff by a note with every repetition, keeping the same melodic rhythm and subsequently resulting in the first note becoming the last note of the piece. Oppositely, I expanded the length of the riff featured in '4' (*TRACK 8*) of *Solo* by adding a note each time.

3.2.6 STRUCTURING COMPOSITION AND IMPROVISATION

This chapter uses contrasting examples to touch on the ways composition and improvisation are structured in the portfolio. Regarding Roller Trio projects *New Devices* and *Fracture*, they mostly only feature saxophone and drum solos while the guitar/bass/electronics accompany. Because there are only two possible orders for two people soloing, it was important to explore structures beyond head-solo-head. Drum solos are traditionally used towards the end of a piece. This happens twice on *Ikigai,* in the codas of 'Ikigai' (*TRACK 1*) and 'Twins' (*TRACK 4*). In contrast, *Fracture*'s 'Mango' (*TRACK 8*) and 'Doris' (*TRACK 2*) are structured with the drum solos coming shortly after the opening heads.

Sometimes, rather than multiple solos based on the same form, solos were structured over different sections. E.g., the piano solo in 'Horns of the Ram' (*TRACK 2, Ikigai*) is played over A, and the saxophone solo is played over the B. I also use sections to break up the solos, e.g., where we play the B section between the solos on 'Serpent Years' (*TRACK 3*).

As noted in chapter 3.1.4 Launchpads and Improvising with Written Material, the tracks on *The Earthworm's Eye View* features both head-improvisation and improvisation-head structures. *Solo*, and tracks like 'Tracer' (*TRACK 6*, *Fracture*), 'Tight Rope' (*TRACK 10*, *Fracture*) and 'Dot Com Babel' (*TRACK 9*, *New Devices*) are more through-composed. The structure of 'Tenor 1 - structuring' (*TRACK 4*, *Solo*) stands alone in the portfolio; during the composition process, using a digital audio workstation (DAW), in this case Logic Pro X, had a considerable influence on me. The piece is made up of three main sections. The first section involved multitracking four rubato saxophone improvisations.

For the second section, I sampled 4/4 bars of the previous material and gradually introduced electronic effects – fading from dry to wet. For the third and final section, I used elements from a mixture of both the first and second sections.

3.2.7   EXTRAMUSICAL INFLUENCES AND REFLECTIONS

Promise/Threat and 'Tilikum' (*TRACK 1, Solo*) are the only two projects which were inspired by extramusical influences prior to the composition or recording process. *Promise/Threat* takes direct inspiration from moving image and the film's themes, and 'Tilikum' was an improvisation inspired by the documentary *Black Fish* (Blackfish, 2013). For 'Tilikum', I used extended techniques and electronics to imitate the sounds of a captive orca in its SeaWorld enclosure. This is one of the three examples featured in chapter 1 where it is explored in further depth. Apart from *Promise/Threat* and 'Tilikum', extramusical influences only occurred when choosing titles for the tracks. 'The Earthworm's Eye View' (*TRACK 7, The Earthworm's Eye View*) was named after the depressing afterlife which Dr Eben Alexander claims to experience in his book *Proof of Heaven* (2012), he calls it the 'realm of the earthworm's eye view'. Following his journey through the realm, he ascends to the 'core' which involves a more idyllic image of the afterlife and correlates with the uplifting end of the piece. The aggressive 'For Linear Park' (*TRACK 8*) is named after the park nearest to my childhood home in Culcheth, Warrington. Before the HS2 (the high-speed railway from London to Manchester) route was slightly changed, Linear Park was going to be destroyed (along with my parents' house).

4 ACOUSTIC TO TECHNOLOGIZED

4.1 SAXOPHONE TONE EXERCISES AND EQUIPMENT

Throughout my practice, I've experimented with saxophone sound, generally aiming for flexibility throughout the instrument. These experimentations have involved equipment exploration and ongoing tone building exercises. The tone building exercises included the standard use of long tones, harmonics and multiphonics to develop lung capacity, diaphragm control, lip and tongue tension and position, and projection. It is especially notable to practise harmonics while keeping lip tension the same and using tongue position and air pressure to control which harmonic is sounded. Exercises in *A Complete Approach to Overtones* (Britton, 2014) were useful in inspiring exercises. In addition to overtones, I've practiced multiphonics, both found through experimentation and from *Multiphonics for the Saxophone* (Gross, 1998). I've experimented with multiphonics by playing them in full, producing the tones individually, and most demandingly, using the lowest note in a multiphonic as a drone and sounding individual pitches on top. In relation to the Indian-style multipurpose practice exercises, I often coupled this with circular breathing practice.

In addition to technique, I also experimented with different mouthpiece and reed setups with a Selmer Mark VI tenor. On soprano, I use a P Mauriat. The albums mainly feature D'Addario jazz select reeds ranging from 3M to 4M on tenor, alto and soprano, apart from the tenor playing on *The Earthworm's Eye View* where I used 4H, and *Ikigai* where I used Rico Royal #4. For *The Earthworm's Eye View*, *Fracture* and *Solo*, I used an ebonite Otto Link Tone Edge #7 mouthpiece. This suited the dark timbre I was aiming for in *The Earthworm's Eye View* but at times felt like it lacked a fuller frequency range on the more loud and aggressive sections. Moving to a wider tip opening and a larger chamber I discovered the ebonite Lebayle Jazz Chamber and recorded *Ikigai and Pebbles,* this mouthpiece had more projection and a better balance of dark and bright but lacked control in certain areas. For *New Devices* I wanted to use longer phrases with projection and faster articulation, which required a small tip opening. Knowing that the saxophone was going to be heavily processed and recorded in isolation, I opted for a slightly thinner sound but with more technical flexibility – using a Metal Otto Link Super Tone Master with a #5 tip opening. Since then, I used the D'Addario Jazz Select mouthpiece, with a #9 tip opening.

This mouthpiece is versatile and suits the variety in my projects. It has a relatively dark tone but gets brighter with volume. While, at the time, the change to #5 tip opening felt like a step back in progress, since the recording of *New Devices*, I moved back to the #9 tip, which I found pushed me to improve my articulation speed so I could play phrases similar to ones in the album's solos, such as 'Nobody Wants to Run the World' (1:32, *TRACK 8*).

4.2 AUGMENTING WITH EXTENDED TECHNIQUE

In conjunction with saxophone tone and the use of circular breathing, multiphonics and harmonics, this subchapter goes into further detail about extended techniques. Throughout the portfolio, I used a range of extended saxophone techniques, such as:

- double tonguing, triple tonguing, flutter tonguing, open slap, and ram tonguing,
- multiphonics,
- teeth squeals,
- altissimo,
- circular breathing,
- alternative fingerings/microtones,
- mouthpiece release (releasing lips around the mouthpiece while playing a note),
- growling and singing while playing,
- glissandos,
- and key clicks.

Additionally, I think about using a mixture of timbres (dark to bright), subtone, range of dynamics, and varying depths and rates of vibrato. During my MA solo saxophone project, I structured the resulting timbres from the extended techniques into short pieces. Part of the process involved sampling the techniques and triggering them using Ableton Live. By doing this I found which of the resulting sounds worked well together – usually I would group extreme opposites (e.g. high and low or short and long). In this portfolio, I aimed to

incorporate the techniques more holistically throughout phrases. With *Ikigai* being an acoustic project, it holds some of the most audible examples of this. E.g., to embellish the written melody in the introduction to 'Ikigai' (*TRACK 1*), I mixed the use of vibrato, glissandos, ornaments, growls, trills, flutter tonguing and false fingering. More examples include much of *Promise/Threat* and tracks like 'Tracer' (*TRACK 6*) and '2 minutes to 12' (*TRACK 5*).

Teeth-squeals and mouthpiece releases are often grouped together and are explored more in Chapter 5. This technique was inspired by John Zorn, the two techniques produce highly contrasting sounds, but physically work very well together. An example of this in my portfolio can be heard at 9:49 of 'Rat Bucket' (*TRACK 3, The Earthworm's Eye View*). There are some examples of me using the techniques separately, such as at 7:38 of *Promise/Threat* (or 'Crawler', *TRACK 2* on the soundtrack), where I use teeth squeals to imitate the chain saws in the film.

Turning to extended tonguing techniques, I use open slap tonguing, also known as 'woodblock slap tonguing ', as coined by Jay C Easton (2012), to imitate and interact with a drummer's snare. This technique can also be found along with the teeth squeals during the *Promise/Threat* section, where I used it to represent the pecking chickens. The introduction to 'Big Saw Jigsaw' also features the open slap tonguing and is explored in further depth during its commentary in chapter 1. While the open slap tongue mimics a snare, I often use a ram tongue to mimic a kick drum, e.g., at 2:55 during 'Tenor 1 - structuring' where the kick drum imitation occurs every crotchet – influenced by electronic dance music.

Regarding alternative fingerings, as mentioned in Chapter 2, most of my inspiration for this comes from Michael Brecker and Pete Wareham. During 'Reef Knot' (*TRACK 1, Fracture*), at 3:35 I quote a signature Brecker false fingering pattern which he uses in many of his solos, for example at 1:42 on 'Not Ethiopia' (Brecker, 1981). The Brecker example introduces microtones between the saxophone's top D and C (transposed in Bb), providing more note options to play withing the small range. Also, Brecker was successful in using a wide array of multiphonics conventionally, especially by substituting the fingering of a high note with a multiphonic which still includes the original note but with other pitches at lower volumes. I was inspired by this method and have practised switching between altissimo notes and multiphonic fingerings. The other pitches in the multiphonic

can act as accompaniment while I practice keeping the highest note the most audible. I used this in my solo during 'Nobody Wants to Run the World' (2:29, *TRACK 8, New Devices*), which also heavily features double tonguing and alternative fingering techniques.

Similar techniques can be applied to harmonics, such as in 'Mango' (*TRACK 8, Fracture*), where we end the second head by pausing on the high G at 01:00. When transposed, the note is a high A on the tenor saxophone in the altissimo register, towards the end of the note you can hear a lower harmonic gradually become audible as the tone is split. Oppositely, during '1' (*TRACK 5, Solo*) I gradually introduce harmonics over low notes to create chords or other melodies on top of a drone. Using harmonics rather than multiphonics creates more consonant chords with fewer microtones. Due to the fingerings of multiphonics, often the notes are out of tune with each other.

'3' (*TRACK 7, Solo*) explores switching from notes to multiphonics. These multiphonics facilitate smooth transitions from monophonic to homophonic, the fingerings for the multiphonics are:

1. the same as an Eb fingering but without pressing the G key down,
2. an E fingering but without pressing the A key down and while pressing the Bb bis key.
3. low Bb fingering without pressing the C key down.

The fingering for multiphonic 1 makes it easily switchable with an A fingering. Multiphonic 2, with the Bb bis key pressed down, makes it easy to switch with Bb. Switching from multiphonic fingering 3 and D is simply achieved by only moving the left-hand little finger. Without the use of electronics, these monophonic to polyphonic movements are the closest possible imitation of a self-accompanying instrument available to the saxophone. Circular breathing is also an important technique utilised on *Solo*, where I circular breathe drones interrupted by melodic lines, and repeat arpeggios while singing melodies, e.g., '2' *(TRACK 6, Solo)*. Extended techniques are a shared interest with other ensemble members, especially Bardon and Hendrickx on *The Earthworm's Eye View* which is explored in more depth during the 'Big Saw Jigsaw' commentary.

4.3 PROJECTION AND CAPTURE

When performing with Tipping Point, *Ikigai* and smaller gigs with Roller Trio (*Fracture*), I tried to play acoustically where possible. Choosing to play acoustically at concerts and jam sessions encouraged me to project and interact with the space. In the cases of Tipping Point and Roller Trio, I would move to the microphone when I wanted to use electronic effects. Playing acoustically in these situations helped to improve my sound, endurance, and ability to play on harder reeds and wider mouthpiece tip openings. The move to harder reed strengths and wider mouthpiece tip openings helped me play at louder volumes with a bigger tonal range, and it also improved the tone and projection of the altissimo register. Most importantly, I also found that it enabled me to better simulate the tones produced at quieter volumes at louder volumes. During recording, if I was multitracking or in an isolation booth, I liked playing at quieter volumes to capture more of the detail, which helped smooth transitions to subtone. Similar results occur on other instruments too, e.g., when drums are played at lower volumes, the drum's 'ring' is inevitably at a closer volume to the attack.

Returning to saxophone tone; a tone is very personal, and its vast potential can cause a lot of time and effort being spent on the smallest details. In addition to technique and setup, the recording capture is equally necessary. Another important role in the recording process was being mindful of setups which compromised facilitating a good performance with a good recording capture. E.g., recording with a microphone on a stand rather than a clip-on microphone. This was to produce better quality with minimal shock interference but was slightly problematic during sections with physical cues, such as during 'Horns of the Ram' (7:33), where changing the distance and angle from the microphone affected the timbre. On the albums where I was using effects pedals, such as *Promise/Threat* and *The Earthworm's Eye View*, I recorded dry and wet channels separately – giving more control over the dry to wet level and the choice of whether to use or recreate effects. Recreating the effects provided more options during the mixing stage. The saxophone was recorded with ribbon and condenser microphones, sometimes simultaneously, some in studio live rooms with the rest of the band (*Promise/Threat, Ikigai, The Earthworm's Eye View, Pebbles)* and some in isolation (*Fracture, New Devices, Solo)*. From *New Devices*, 'Dot Com Babel' and the tenor saxophones on 'Milligrammar' were recorded at home using an

SE Magneto into a Sound Devices USBpre2, with the input level considerably high, engaging the interface's inbuilt analogue limiter, causing a brittle, bright sound.

Whether or not we recorded live in the same room, multitracked, or played in isolation had considerable effects on the performances. During the recording of *The Earthworm's Eye View,* we were in the same room with no headphones and with as little monitoring as possible to avoid bleed, therefore playing at loud volumes was sometimes restrictive. As explored in the case study commentary for 'Big Saw Jigsaw' (*TRACK 5*), the purpose of not using headphones was so that we interacted with the acoustic volumes of our instruments and the space we were playing in, which can capture more natural results. However, during more aggressive tracks like 'For Linear Park' (*TRACK 8*) where we were playing much louder, hearing each other became a struggle. On reflection, during this piece, I left more space than I usually would have under similar performance instructions. The use of space was to hear what others were playing, and the recording is a reminder of how the environment can impact the outcome of an improvisation.

4.4 JAZZ SIN 1: MULTITRACKING

Among purists, there seems to be a level of stigma towards jazz musicians who use multitracking. Perhaps they feel it is cheating or inauthentic, like a 'jazz sin'. Some contemporary jazz musicians feel the need to state that their recordings were captured live in their linear notes. Even though multitracking was first used in jazz in 1941 to record 'The Sheik of Araby' by Sidney Bechet and since 1955 by renowned artists such as Lennie Tristano and Miles Davis (Taylor, 2007).

Some of the projects, especially *The Earthworm's Eye View* and *Pebbles*, valued the process and results of capturing performances with no overdubs or multitracking. But in contrast, most of *Fracture* and *New Devices* was multitracked. My main concern regarding multitracking comes from improvising musicians not being able to react as effectively. But Reddin-Williams and I found that while the process was different, it was not detrimental to the results. Regarding tracks on *Fracture* more specifically, which apart from 'Doris' and 'Mango', were fully multitracked, there were several things which contributed to this:

- years of playing together, which resulted in us being able to subconsciously predict each other's playing,
- playing compositions which contain moments which call for interaction,
- recording the drums first with me being present.

In addition to the above, while recording the drums, I tried to help recreate a live performance by physically moving as if I was playing along. The movement was not only to cue transitions or endings of solos, but it also intended to conjure energy and provide something for Reddin-Williams to interact with, via understated dancing, gestures like nodding my head and different facial expressions. A specific audible example of interaction not being hindered by multitracking is during 'Reef Knot' (*TRACK 1*), where at 2:30 I was going to resolve a semiquaver line, but going against my intentions, I resolved it slightly earlier to match the push from the guitar and drums.

4.5 PROS AND CONS OF CLICK TRACKS

In conjunction with multitracking, Roller Trio utilised click tracks. Playing to click tracks started with *Fracture*'s 'Tracer' and 'Tightrope' and progressed during *New Devices*, where all tracks apart from 'Enthusela' were to a click. The absence of click tracks in my other projects was mainly due to:

a) the common concern of it restraining the performances too much, lacking flexibility, and detracting energy and emotion,
b) regular time and tempo changes while keeping sections open would have meant having to trigger the changes live, which could have been possible (e.g. by changing 'scenes' in Ableton Live's session view), but would have meant spending time programming them while feeling concerned about (a) happening,
c) having to use headphones to avoid the click bleeding into the microphones, which can interfere with interplay and the interaction with the space,
d) because it wasn't required, especially in free time improvisation (e.g. *Pebbles*).

Although d) is valid, Reddin-Williams and I use a click track on 'A Whole Volga' (*TRACK 3, New Devices*) which is a free time improvisation. But free time improvisation while hearing the click in the headphones created interesting results. As an 'in' to 'out' technique, this is explored in more depth during chapter 5.

4.6 JAZZ SIN 2: EDITING

Editing in post-production was useful on several occasions, in some cases, this was a consequence of a lack of rehearsal time. E.g., for the recording of *Ikigai*, the band only had two days of rehearsal. Like *Promise/Threat,* which was edited together from three improvised takes, the finished tracks on *Ikigai* were edited together from takes recorded throughout the two-day session. I did not decide on this process before the recording, but I knew the option was there. It is obviously best to be as rehearsed as possible for a recording, even when taking editing possibilities into consideration. For *New Devices,* using editing more as a creative tool, Chris Sharkey cut, copied, and pasted samples from multiple takes of Reddin-Williams improvising to 'Milligrammar', which resulted in interesting drum parts.

4.7 Live Effects Processing

The various projects feature different levels and approaches to live effects processing. *Ikigai* and *Pebbles* are acoustic, *Solo* is solo saxophone and heavily features the use of effects pedals, *The Earthworm's Eye View* uses a mix of live effects pedals and effects in post-production, and all effects for *Fracture* and *New Devices* were added during the mixing stage. For the projects where I used pedals, I mostly used variations from the same selection, and changed the order of them to suit different situations. The pedals worked both in live and studio settings, but when in the studio, better results were mostly achieved in post-production, and as previously stated, recording the saxophone signals dry and wet allowed us to later choose whether to use or recreate the effects or not. Recreating the effects in software allowed us to automate and tweak the parameters at various stages of the mixing process.

Here is a list of effects pedals which I used to process the saxophone signal:

- Boss RC-1 (Loop Station): a simple looper which can record, playback, overdub, undo, and replay loops.
- Boss RV-6 (Digital Reverb): This pedal includes level, tone, and time controls, and eight different modes. The modes included spring, plate, hall, and room emulations plus specialist modes such as modulate, shimmer and dynamic.
- Boss DD7 (Digital Delay): This pedal has level, feedback and delay time dials as well as specialised modes such as reverse, analogue, modulate and hold. Modulate creates a slight chorus effect by adding slight pitch variations, hold acts as a looper for up to 40 seconds. The Analog mode emulates a vintage device by slightly changing the sound of the delays as it fades.
- Boss PH-3 (Phase Shifter): I used this pedal's 'rise' and 'fall' phasing modes to loosely recreate the Moog Moogerfooger MF-103 which was used on *Fracture* and 'For Linear Park' (*TRACK 8*, *The Earthworm's Eye View*).
- Boss OC-3 (Octave): An octave pedal with dry and wet outputs. It also has a useful range dial. The range dial sets a certain note from which pitches below start being pitch shifted down an octave. It also has the option of pitch shifting two octaves below.

- Boss Harmonist PS-6: This is a harmoniser pedal covering all equal tempered intervals up to an octave up and an octave down. It also has triple voice, pitch shifting and bend options, and the intervallic/triadic harmonies can also be set to different major and minor keys,

- The Electro-Harmonix FREEZE Sound Retainer records, repeats and crossfades a micro loop. I mostly used this pedal to creates drones or textures on 'Armley Days 2' and 'Tilikum' (*TRACKS 3* and *1, Solo*).

- Electro-Harmonix Superego Synth Engine: This pedal is a more complex version of the FREEZE Sound Retainer which allows for layering frozen sounds and to fade and/or glissando between the layers. It also features an automatic setting meaning it will automatically freeze sounds which peak above a manually set volume. Additionally, it has the option to send the wet signal and return it. During tracks 5-12 of *Solo,* I used the send as another output to create more mixing options.

- Electro-Harmonix Micro Q-tron: This is an envelope follower which sweeps the filter's centre or cut-off frequency based on the volume and dynamics of your playing (Electo Harmonix , 2015).

- Zvex Fuzz Factory Vexter: I was drawn to this pedal because of its inbuilt gate and compressor, while there was a vast array of achievable sounds, after much experimentation I found this was not the most suitable pedal for my situation. You can hear this pedal used clearly at 1:18 of 'Tilikum' (*TRACK 12, Solo)* and at 3:01 on 'The Earthworm's Eye View (*TRACK 7, The Earthworm's Eye View*).

- Hexe reVolver II: This is a micro sampler/glitch/stutter pedal. Like the Electro-Harmonix Superego this pedal also has an automatic mode. Additionally it has a self-retriggering mode, which 'simulates a rhythmic capturing of a new sample in constant intervals, set with the SPEED knob.' (Hexe, 2019)

During performance, I controlled the pedals with a mixture of my feet and hands and would regularly perform bare foot so I could use my toes to control the parameters. In addition to the projects in the portfolio, there is a recording of a concert available, where one week before a Roller Trio performance in 2014, I broke my right-hand. Instead of cancelling, we wrote a new set of material which I could perform one-handed with saxophone and pedals. The gig was recorded and available to stream online, it is called *Live in Rotterdam – European Jazz Competition Finals.* (Mainwaring, 2014).

I recorded tracks 5-12 on *Solo* in the same session. The signal flow is shown below.

Figure 39: Signal flow for track 5-12 of *Solo*
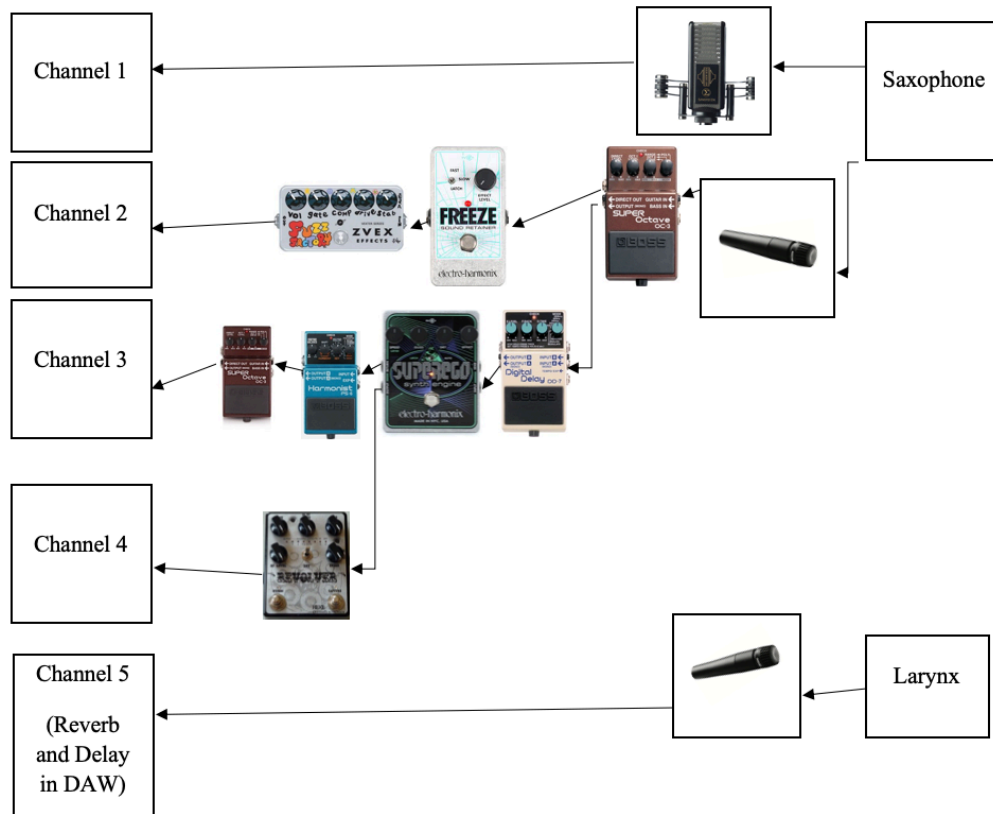
The Superego was set to manual on all tracks, apart from '6' (*TRACK 10*). The manual setting allowed me to control the harmony by engaging the footswitch and freezing different pitches. During '6', the Superego was set to automatic, causing it to automatically detect new notes and freeze them. The Hexe Revolver was also set to automatic when explored on 'Tilikum'. The randomization gave me something other than myself to interact with, almost like interacting with another musician. In contrast to this, there are places where I used the Hexe Revolver manually, such as 'Equanimity' (*TRACK 2*) on *The Earthworm's Eye View*. I used the pedal to sample my saxophone in real-time and change the speed, pitch, and length of the sample (2:1*2*). The reverb (Boss RV-6) was mostly set to modulate. 'Armley Days', 'Armley Days 2' and 'Tilikum' use these pedals with added looping (RC-3), distortion (Zvex Fuzz Factory) and envelope filter pedals (Micro Q-tron).

If I had to continue with only one pedal, it would be a delay pedal. While a simple device, it has a powerful range of uses, from creating a short, slap back to a wall of sound. The DD7 also has the option to add an external tap tempo, which I used during 'Robin Stood as a Robin Hood Should' (*TRACK 4*). From 1:30 until the end of this piece, the feedback time inspired how much space I left between my phrases.

As mentioned in the pedal descriptions above, the Boss OC-3 has a useful range knob. 'The effect extends into higher frequencies as the knob is turned to the right, turning the knob to the left limits the effect to lower frequencies' (Roland Corporation, 2015). During the tracks on *Solo*, I would often set this pedal so that the lower range of the saxophone would be pitch shifted down the octave, with a mix of the wet and dry signals. I also experimented by sending the wet signal of the OC-3 to the Electro-harmonix Freeze pedal, allowing me to freeze low notes which acted as drones or roots of the chords. Wynter also used the OC-3 on his guitar when recording *Promise/Threat.*

In addition to *Promise/*Threat, the original guitar parts on *Fracture* also utilised the OC-3 and were made possible by the split function. Wynter, especially when playing live, would send the OC-3's wet signal to a bass amp. We recorded the wet signal for *Fracture*, but we did not use it in the final mixes due to the pedal's artificial sound. Instead, Wynter, who is also an excellent bassist, overdubbed bass guitar and kept it rhythmically as close to the bottom notes in the guitar parts as possible. We did this to keep the record sounding similar to our live sound, made up of three musicians filling three roles. On top of my pedal collection, the use of Sam Hobbs' Moogerfooger MF-103 appears several times during *Fracture* and *The Earthworm's Eye View*, most aggressively on 'For Linear Park' (*TRACK 8*), where the LFO is set to 'stun' and Hobbs controlled the rate manually to interact with the pace of the piece. The saxophone here is one of the few occasions during the portfolio where it is almost unrecognisable. 'Reef Knot' also uses the MF-103 set to 'stun' with the rate in time with the track, in contrast to 'For Linear Park', during 'Reef Knot' the wet signal is relatively low.

For *New Devices*, except for 'Dot Com Babel', I recorded all the saxophone parts acoustically and the effects were added after by Chris Sharkey. For the live performances, I recreated the effects with the TC Helicon VoiceLive Touch 2, which can be controlled simultaneously by hand and foot, with the main unit clipped to a mic stand, and the six-

button foot controller on the floor. Further use of effects and equipment was explored more in the 'Tilikum' commentary during chapter 1.

4.8 ELECTRONIC AESTHETICS

In reference to examples across the portfolio, this subchapter expresses my thoughts and reflections concerning the use of electronics in live performance. The first paragraph discusses my thoughts on live looping, which since experimenting with live looping on tracks 'Armley Days' and 'Armley Days 2', I have mostly avoided. I wanted to avoid using it to showcase multi-instrumentalism or using it in an attempt to replace a full band. After the mentioned tracks, using loops was mainly for texture, e.g., a background pad almost part of a reverb. Two examples of this are present in 'Enthusela' and 'The Third Persona' (*TRACK 5 and TRACK 6, New Devices*). Here, as mentioned in the case study commentary of 'Enthusela', Chris Sharkey made the loops constantly evolve by assigning LFO's to different effects parameters at very slow but slightly different speeds.

New Devices tracks like 'A Whole Volga' (*TRACK 3*), 'Sever So Slightly' (*TRACK 7*), and 'Dot Com Babel' *(TRACK 9)*, and also 'Breathe' (*TRACK 6*) and 'The Earthworm's Eye View' (*TRACK 7*) from the *The Earthworm's Eye View*, feature loops or ostinatos which we are free to develop improvised ideas over for extended periods. For live performances of *New Devices,* to include the extra electronic sounds on stage, Chris Sharkey triggered loops via Ableton while playing bass. But after several gigs, we found that it detracted from live performance, especially when materials on the loops were more complex than the live parts. This issue of cause and effect reminded me of Schloss' *Using Contemporary Technology in Live Performance: The Dilemma of the Performer,* wherein his conclusion, he says 'Magic in performance is good. Too much magic is fatal! (Boring).' (Schloss, 2002)

For similar reasons to rhythmic looping, I've also mostly avoided harmonizers which aim to imitate the sound of multiple saxophones rather than provide an obvious effect (e.g. 'Enthusela' and 'Sever So Slightly', *New Devices*). Likewise, apart from the process involved in making 'Tenor 1 – structuring', I avoided using saxophone harmony or counterpoint overdubs so that the individual band members were the only voices heard on

the recording. If I wanted another saxophone part, I would have formed an ensemble which featured another saxophonist.

Towards the end of this portfolio, inspired by collaborating with Sharkey and his use of it during the making of *New Devices*, I started experimenting with Ableton Live, and I will continue to explore it for live performance beyond this portfolio. Around the same time of composing the *New Devices* material, I was experimenting with the saxophone as a MIDI controller, using max patches trigg.me and send.me which were created by Yehezkel Raz, provided via www.4live.me (Raz, 2015) and Jam Origins plugin MIDI Guitar 2 (Jam Origin, 2017). The 4live plugins allowed me to trigger samples by playing at certain volumes, and MIDI Guitar 2 converts audio to MIDI in real-time, allowing me to play MIDI instruments using the saxophone. MIDI Guitar 2 was used to recreate 'Dot Com Babel' live, which is the final track on *New Devices* where the saxophone is doubled up with Ableton's MkII2 piano.

'Decline of Northern Civilisation' (*TRACK 1, New Devices*) began by sending *Solo* to Sharkey, who sampled moments he found interesting and loaded them into Ableton Live's Simpler plugin. In Simpler, he made use of the classic function which allowed him to play the samples at different speeds. Similarly, Sharkey created his part on 'Mad Dryad' using chopped samples of an acoustic guitar, pitch shifted lower. I valued the fact that we were using unique samples, it felt like we were creating instruments, avoiding pre-sets or standard sounds available to anyone. Most of the samples were only subtly processed, the bass part of 'Decline of Northern Civilisation' is distorted with the Sausage Fattener plugin, and the acoustic samples were spliced and pitched down an octave. Apart from these techniques, only EQ and compression were used to process the source material; various bandpass filters were used to make sure the parts did not interfere with each other on the spectrum.

4.9 PRODUCTION

This chapter includes some background and insight into the production process, using *Fracture*, *Ikigai* and *New Devices* as examples.

Fracture

One of the aims when producing *Fracture* was to enhance the sound of us playing live without adding more parts which might sound like a fourth member or an overdub. Some of Sam Hobbs's key hardware to help with this included the Sherman Filterbank2 and as previously mentioned the Moog Moogerfooger MF-103. The most obvious instrument to try and thicken the texture was the guitar. This was natural because it was already acting simultaneously as a chordal and a bass instrument. In contrast to how Wynter performed the guitar parts live, in the studio he split the riffs into different parts, e.g., recording the riffs played on the bottom strings separately to the melodies played on the top strings. This process had two advantages, firstly it was easier to allow the strings to ring out and overlap, and secondly, Hobbs could process and edit the parts differently – allowing for more creativity during the mixing stage. Multiple guitar parts were overdubbed in addition to this to add background textures, creating variation by being sent through different amp plugins and effects chains. This technique is especially evident in 'Tight Rope', throughout the guitar part there is a clean repeated bass note, while chords in the above part are processed with tremolo and tape delay.

In contrast to a recording of us playing in the same room and bleeding into each other's microphones, by multitracking (as mentioned in chapter 4.4), we were free to mute and unmute the separate tracks and process them differently. An example of this is during the breakdown of 'Splinter' (4:06, *TRACK 07, Fracture*), where we muted the bass, and gated, filtered, and distorted the drums. Throughout the projects, similar techniques are also used only on the drums. To use another example from *Fracture,* during the introduction of 'Reef Knot' (*TRACK 1*), the overhead microphones were processed with a gate, when it opens, the signal is sent through distortion and delay set to a triplet rhythm.

Ikigai

While mixing 'Ikigai', with the help of Ben Eyes, we used volume automation and compression to smooth out transitions between sections made up of contrasting textures and speeds. E.g., the introduction of 'Ikigai' (*TRACK 1*) is much louder than the following A section at 1:27. For the louder section we created a thicker texture, most significantly by Richards sustaining thicker piano chords, and Hanley incorporating a heavier use of crash and ride cymbals. I intended for the A section to be uplifting, but because of the texture change it would act more like a breakdown. In contrast to a live acoustic setting, with the absence of automation and compression, these techniques helped achieve the desired results. With it being an acoustic project, the scope for recreating the production techniques live differed to the more electronic and amplified projects, e.g., *New Devices*.

New Devices

We recorded *New Devices* in Logic Pro X, and the saxophone was heavily processed consistently throughout the album. Here is a list of plugins that were used:

- Soundtoys by Echo boy
- H Delay by Waves
- Decapitator by Sound Toys (distortion)
- The Culture Vulture by Thermionic Culture (distortion)
- Black Box Analog Design HG2 (saturation and harmonics)
- Limitless by DMG Audio (limiter)
- The Pitch shifter within Logic, by Apple
- Reverb UAD BX20 by UAD audio plugins (spring reverb)
- Liquidsonics 7th heaven - (hall and chamber reverb)

The production on this album is inspired by techniques often used in contemporary popular music. Chris Sharkey and Alex Bonney (mixing engineer) treated the saxophone in a similar way to a vocal track on a pop song. This involved techniques which made it stand out in the mix, like a high pass EQ, and thickening effects. The thickening effects included distortion, delay, compression, and limiting. The distortion added harmonics, and the use

of delay involved two or more digital emulations of tape delays (e.g., one slap back delay at around 70ms and another longer delay set to a dotted crotchet rhythm). The compression settings created interesting timbral results by levelling the amplitude – it made timbres produced at quieter volumes on the saxophone the same amplitude as the timbres produced by playing loud. This was also the case for the delays, which became more audible between phrases, without muddling the melodies by having a higher wet level.

At other points during the album, Sharkey further processed the saxophone with more noticeable techniques, such as on 'Milligrammar' at 2:47, where the soprano saxophone delays are hard panned left and right, and the time parameters are modulated with LFOs. In a similar way to 'Enthusela', which I explored in the case study commentary, for 'Third Persona', I created a loop using a baritone saxophone, which became a consistent texture to improvise along to. Sharkey took the four loops and made them continually evolved by having them gradually pan from speaker to speaker at different speeds with different reverbs. 'Enthusela' and 'Sever So Slightly' both feature the saxophone copied onto different tracks and pitch shifted above and/or below by perfect 5ths or 4ths. When Sharkey and Bonney pitch shifted the saxophone higher, they would quieten the higher frequencies to avoid the 'chipmunk effect'.

5 'In' to 'Out'

The following subchapters explore various 'in' to 'out' techniques utilised throughout the portfolio.

5.1 Sidestepping

Sidestepping is the process of repeating the same melody but transposed to different pitches. Largely influenced by Michael Brecker, the main melodic devices I sidestep are intervals, triads, shapes, and pentatonic and heptatonic scales. Sidestepping is useful for creating lines which move 'in' and 'out' of the harmony. Over a chord, a common approach to this is to start with notes which belong to the chord scale, then transpose the notes into different keys before resolving back to the key. There are many approaches to deciding where to transpose to, e.g., moving randomly, superimposing new chord progressions, or moving symmetrically. Symmetrical movement can be used to create phrases which start and end with the same note an octave apart. By moving with intervals that equally divide the octave, you can create different harmonic sounds – moving in tones creates a whole tone sound, minor thirds creates a diminished sound, major thirds creates an augmented sound and tritones create an altered sound. Sidestepping builds tension and can be useful when improvising fast melodic lines which resolve to different chords and sections.

Here are two examples of sidestepping during the *Fracture* album. At 4:54 of 'Three Pea Soup' (*TRACK 9*), I sidestep the interval of a minor third. It ascends chromatically, building tension before resolving to the next section. An example of sidestepping to create diminished and augmented sounds occurs at 3:49 of 'Reef Knot' (*TRACK 1, Fracture*). Here, I sidestep a 1235 pattern which ascends in minor 3rds, followed by triads in a 5313 pattern, which descends in major thirds and outlines the augmented scale. I also utilise this melodic line at 5:32 in 'Ikigai'.

5.2 George Garzone's Triadic Chromatic Approach

As well as sidestepping, another melodic device I used throughout the projects was George Garzone's *Triadic Chromatic Approach* (Garzone, 2009). The Triadic Chromatic Approach is the process of linking random inversions and permutations of triads together by a semitone. I was attracted to the beautiful and complex melodic lines it creates. Some of the lines that it generated are present throughout my portfolio and are explored in more depth within the 'Enthusela' commentary. In the listener-reader section, it contains some relevant examples via transcriptions and analysis.

I also use a melodic line created via this method in one of the compositions, '2 Minutes to 12'. As displayed in figure 32 (below), the melody is predominantly made up of major triads. Apart from the second Eb triad, the triads are in first inversion. Within the triads, the notes come in various permutations, and then follow the rule of linking to the next triad via a semitone. For example, the first triad is Eb in 1st inversion, starting with the root, 5th then 3rd, the 3rd chromatically steps to G#, which becomes the new 3rd of an E triad, continuing with the root and the 5th.

Figure 40: Triadic Chromatic Approach melody in '2 Minutes two 12'

5.3 Interrupting Pedal Tones

Alongside Garzone, I was inspired by Mark Turner who is one of his ex-students. During an interview featured on the DVD, *Solos: The Jazz Sessions* (2009), Turner explains the concept behind an improvised solo piece called 'Beauty Mark'. The piece explores a high pedal note which he interrupts with low notes, the low notes ascend chromatically, and as it progresses, he introduces ascending arpeggios, shapes, and scales – experimenting with harmonic variations between the low notes and the pedal note and varying the duration and density before arriving back to the pedal note. A similar approach, but with a contrasting aesthetic, is inspired by John Zorn. It involves two extended saxophone techniques explored earlier in the commentary: teeth squeals and mouthpiece releases. A long teeth squeal is sustained and interrupted with bell key mouthpiece releases. Zorn often builds tension by playing the mouthpiece releases sparsely and increasing the rate and ascending chromatically. An example of Zorn doing this is at 3:41 in the documentary *A Bookshelf on Top of the Sky: 12 Stories About John Zorn.* (2002).

Inspired by these linkable approaches, there are examples in the portfolio where I incorporate both. E.g. during 'Rat Bucket' (7:17, *TRACK 3, The Earthworm's Eye View*), I continue to refer to a high note and chromatically ascend the low notes while introducing fast phrases in-between which gradually get longer and more complex. During the fast phrases, I use scales and note groupings which go 'in' and 'out' of the harmony. In contrast, at 3:54 of 'Doris' (*TRACK 2, Fracture*), I use the technique to create lines which are 'in' the harmony. The approach reflects the harmony in the guitar part in the way that the higher pitches (Am triad) stay the same and the lower notes (the bass notes) change. The chords are Am/F, Am/F#, Am/G# Am.

5.4 APPROACHES TO TWELVE-TONE IMPROVISATION

Further exploring the 'in' to 'out', I have also tried to incorporate twelve-tone rows into my improvisation. Twelve-tone rows, in a similar way to sidestepping and the Chromatic Triadic Approach, are useful for creating lines which explore 'in' to 'out' by starting with a note inside the harmony, then exploring all other notes within an octave, some of which will be 'in' and some of which will be 'out', before returning to the first note. To memorise the twelve tone rows and create interesting note groupings, I split them into three or four groups of notes. Once the note groupings are memorised, they can then be played in order, but in different inversions and permutations. During my MA, I explored the use of twelve-tone rows in compositions and to structure improvisation. Since then I have been more interested in trying to generate and improvise with them, both in a harmonically free context and by using them to play 'in' and/or 'out' over chord changes.

An example of me using a twelve-tone row within one of my solos is at 5:35 of 'Ikigai' (*TRACK 1, Ikigai*). It starts 'in' the chord scale with a Bb, then follows with Eb E Db G A F# D C Ab F B, before resolving back to the Bb. During my PhD studies, and while starting to incorporate twelve-tone rows into my vocabulary for improvisation, John O'Gallagher published an interesting book called *Twelve-Tone Improvisation* (O'Gallagher, 2013), and in the future I plan to further explore his approach too.

5.5 'TIME NO CHANGES' AND 'CHANGES NO TIME'

Turning to 'in' to 'out' exploration using time-feel, tempo, and rhythms, the portfolio includes several examples of 'time no changes'. For those who are new to jazz, 'time no changes' means there is a pulse (usually with a swing feel) but no preconceived chord changes, so the musicians are free to improvise using the twelve notes in any combination or order. 'Changes no time' is the opposite of this, where there are chord changes, but in free time. In addition to the short sections during the case study commentary of 'Big Saw Jigsaw', one example of 'time no changes' is '7' (*Pebbles*), which moves 'in' and 'out' of the concept from 2:15 until the end. An example of 'changes no time' in the portfolio is at 3:05 of 'Mango' (*TRACK 8, Fracture*).

5.6 Fighting the Feel

There are also moments during the projects when the time-feel of a piece is challenged. This is a technique which is only effective when the time-feel has been established so that the transition away from it is an obvious statement. There are two clear examples where I explore this within my solos, the first is 'Nobody Wants to Run the World' from 1:32 (*TRACK 8, New Devices*) and the second is during 'Ikigai' (5:46), where I simply repeat the same note 'in' and 'out' of the time-feel, to create an awkward, tension building phrase.

There are also examples where ensembles collectively explore this concept. E.g. during 'Wax' (17:16 *Promise/Threat* or *TRACK 5* of the audio version), which features a broken swing feel moving from intense and distorted to sparse and spacious, and also during 'A Whole Volga' (*TRACK 3, New Devices*). 'A Whole Volga', as previously stated, was recorded to a click but while improvising we mostly avoided highlighting the pulse. This approach led to moments where Reddin-Williams and I, after playing against the pulse, resolved in unison. The resolutions were interesting and unpredictable because they were a direct result of playing freely to a click.

5.7 Using 'In' to 'Out' Techniques in the Compositions

As well as providing concepts for improvisation, I have utilised 'in' to 'out' techniques within the compositions. This subchapter provides some examples, again, from *Fracture* and *Ikigai*. For 'Horns of the Ram' (*TRACK 2, Ikigai*), I wanted the drums to improvise loosely around the bass riff and melody while occasionally syncing up with sudden hits. Simultaneously, the notated saxophone and piano motifs add chromaticism, textural and timbral focused extended techniques with clusters on the piano and multiphonics and flutter tonguing on the saxophone.

There were also times when we used this technique as a structuring device, e.g., for the drum solo in the final section of 'Reef Knot'. Wynter and I repeat staccato hits and Reddin-Williams plays freely against them, occasionally resolving in unison and sometimes purposely loose before joining the pulse with snare rudiments.

6 PROCESSES

Figure 41: Process Flowchart
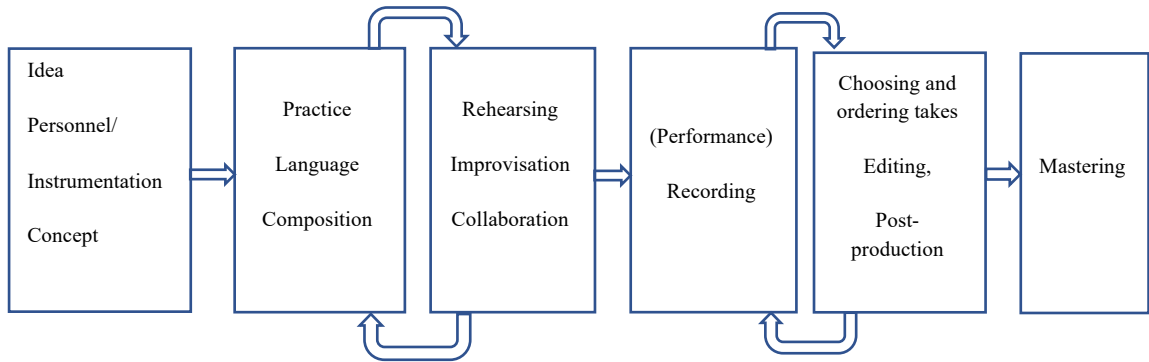
The process for all the ensemble projects in this portfolio can be summed up in the flow chart above. To reiterate and go into more detail, the albums would begin with an idea, a decision of personnel/instrumentation, and a concept. Following communication with the members in mind, the idea would morph into personal practice, language for improvisation development and/or composition. The third stage would consist of rehearsal, group improvisation, and arranging in collaboration. The second and third stages would cycle until ready for recording, which would be followed by the process of choosing takes, editing and post-production. Before the final stage of mastering, in the case of *Fracture, Promise/Threat* and most significantly *New Devices*, the recording and post-production stages would cycle. Regarding the stages in figure 33, *New Devices* was the most cyclical. During the months we worked on it (between September 2017-February 2018), we were regularly communicating and working remotely, recording overdubs and tweaking.

Generally, ordering the tracks was a straightforward process. Apart from *Promise/Threat*, where Ray Kane had already provided the overall structure, the tracks were ordered during the second to last stage of the process. At this point, because of spending a lot of time with the tracks already, to me, it felt like the tracks naturally ordered themselves. But to summarise, while regarding the overarching narrative, the transitions between individual tracks involved considering a mix of elements, and whether we wanted to surprise the listener or create continuity. Additionally, how one track ended, and the next track starts would inform the amount of silence left between the tracks on the master.

Pebbles and *Solo* were wholly improvised, *Ikigai* only contained compositions, and the source material for *Promise/Threat* and *New Devices* was initially improvised – but the final versions were heavily edited and included overdubbed material. *Fracture* mostly used compositions but included two multitracked improvisations ('Tracer' and 'Tight Rope'). To structure *The Earthworm's Eye View* as an album, I used freely improvised pieces alongside the compositions. Overall, this album comprises five composed pieces and five improvisations. It was recorded in two days and the improvised pieces were recorded sporadically between takes of the compositions. The ones that were included on the album were titled 'Playtime', 'Robin Stood as a Robin Hood Should', 'For Linear Park' and 'Home Time'. These improvisations were useful for developing the album's narrative and including a wider variety of musical results. The narrative is also reflected in the opening and closing track titles, which are 'Playtime' and 'Home Time'.

7. CONCLUDING REMARKS

This portfolio aimed to investigate three continua: improvisation to composition, 'in' to 'out', and acoustic to technologized. As a saxophonist, composer, and collaborator, I have used various techniques to do this, as presented within the seven albums and the commentary. The research demonstrates how I have integrated a specific variety of techniques used to explore the continua into a vocabulary for composition and improvisation, and it displays how the vocabulary can be applied in different contexts to produce a range of results. The portfolio provides a foundation for future work, and for anyone interested in conducting their own investigation, is an example of one of the infinite outcomes the continua can inspire. Additionally, the commentary outlines the specific techniques and processes which I have used, and one or more of these can be incorporated into the vocabulary of anyone also interested.

A limitation of the study was finding a visual and accurate way to represent the projects' positions on the continua. This was because during the music the positions are constantly moving. E.g., two instruments might be exploring the extremes simultaneously or one instrument might shift suddenly from one extreme to another. However, with the three continua on x-, y-, and z-axis, and regarding the project descriptions in chapter 1, the 3D graph on the following page shows how I can display the general focus of the projects' positions. While the graph is oversimplified, it can be used to visually contextualise the projects after exploring them individually in depth. My future work will likely expand on the portfolio by further developing the techniques used to explore the three continua within solo work, larger ensembles, and a wider network of musicians.

Figure 42: 3D Project Graph
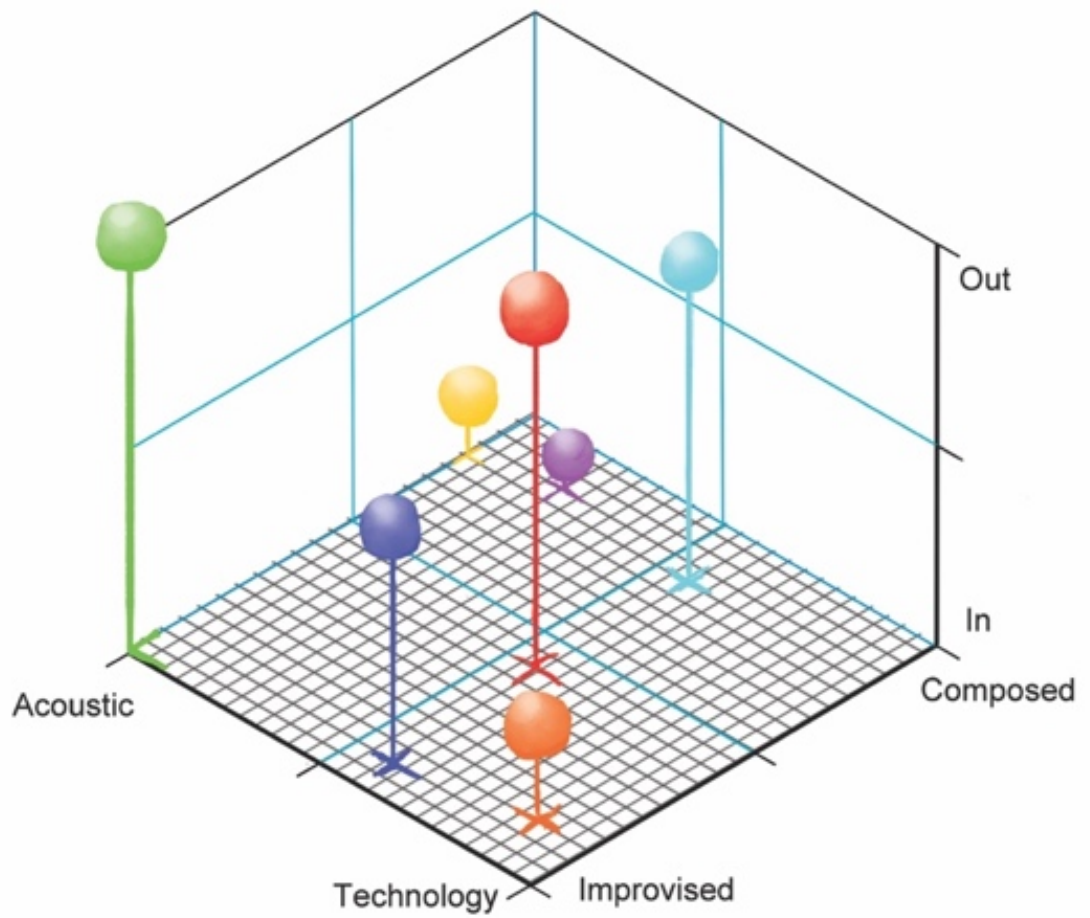
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