

**A Gamelan Composition Portfolio with Commentary: Collaborative
and Solo Processes of Composition with Reference to Javanese
Karawitan and Cultural Practice.**

Six Volumes – Volume Number 2

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Music

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Project 1

Collaboration Duo with Charles Matthews. Improvisation and collaborative composition, featuring gamelan instruments, recorder, electronics and found sounds.

CD 1

Track 1 – Original improvisation – source material for *Out of Focus*. Palmers Green, 23rd October 2010 (18.19)

Track 2 – Gender and electronics improvisation. York gamelan room, 29th October 2011 (8.22)

Track 3 – Rebab dialogue. York gamelan room. Recorded 27th May 2011 (20.32)

Track 4 – Rebab, long delays and feedback – Gathering of the Gamelans concert, Sir Jack Lyons Concert Hall, York, 26th April 2012 (6.44)

Track 5 – *Out of Focus*. First live performance at the Gathering of the Gamelans concert, Sir Jack Lyons Concert Hall, 26th April 2012 (8.14)

Track 6 – Recorder piece (version of track 4) 16th-19th July 2012. Palmers green (9.57)

Total duration – 1 hour 18 minutes

CD 2

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Track 2 – Bridging phrase (gender)

Track 3 – Bridging phrase (gender)

Track 4 – Ending phrase to a seleh note (gender)

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1) Background to the collaboration

Before starting the work on our collaboration, we had months of discussion about what we wanted to do. We had already played together in a number of groups (Southbank Gamelan Players, the Thursday advanced class at Southbank Centre run by Pete Smith, groups at SOAS and RCM often taught by John Pawson, and informally.) We had already played together on Matthews’ first PhD project (*Ketawang Subakastawa* for gender and electronics), and had worked together to produce a loop for a contemporary recorder piece by Christopher Fox that I had been performing, called *Winds of Heaven*, the first section of which features long glissandi, which are looped and played back through speakers.

We discussed improvising with gamelan instruments (starting with gender), recorder and electronics. We quickly moved onto the concept of using any instruments that would be available, regardless of tuning, therefore enabling us to improvise wherever we wanted, and building in flexibility as a core part of our work together. Matthews discusses his initial ideas:

It’s what I was responding to at the time, the circumstances, the things that I’d been involved with, and my own kind of role as either somebody who’s realising somebody else’s piece or whether I wanted to lead a piece, write a piece, compose, or if it was going to be a much more collaborative endeavour, which I think we agreed it was... In terms of actual ideas, I remember wanting to work with the recorder,

I remember putting reverb on the recorder in the studio; we'd gone into the studio to record the first two pieces [Subakastawa, and we also recorded a solo recorder piece that I had been practising for a performance]... and, I remembered listening to the reverb in your recital, on the recorder and just enjoying the relationship between the instrument and the acoustic space, and reverb is something that I use a lot, it's one of my tools that I go to and very rarely use it straight, I often will feed it back on to itself so it develops its own kind of tones, and different textures and kind of...sounds that move around, it's like a very basic... I would almost say it's like an instrument for me, but it's more... I guess it's a technique...it's just something I keep coming back to. I was interested in trying stuff with sine waves, and gender and sine waves and recorder, so that's very pure tones and I was definitely interested in making beating tones and those kinds of things. (Personal Communication, July 2012)

Matthews was also inspired by my final performance for my MMus at SOAS, where I performed a piece written by myself for gender and recorder called *Look at the Moon! It's Turning Blue... Part 1*¹ and a piece called *Pieces of 5 and 3* by Daniel March. Matthews said this was one of the first times he had heard new music for gamelan instruments.

My ideas were similar to Matthews'. I wanted to improvise and explore the sound world that could be produced when combining recorder, gamelan instruments and electronics. Many years ago I had attended a

¹ *Look at the Moon! It's Turning Blue... Part 1* and *Look at the Moon! It's Turning Blue... Part 2* are two separate pieces – the former being part of my MMus degree, and the latter being part of this composition portfolio.

workshop with Dutch recorder player Susanna Borsch², which explored the use of delay pedals and other electronic effects that could be used in combination with the recorder. I had been fascinated by this, but had not had the chance to explore it further.

Matthews and I also had a close friendship, and had many discussions about our separate visits and experiences of Java and learning gamelan music. All these elements worked well to create a space for our new project. Having a fairly deep knowledge of each other's musical abilities and way of thinking creatively, gave an understanding of how our musical collaboration would work. The project ran for roughly 2 years (2010 – 2012), and we built up a way of working that meant we could explore and create new music in a way that stimulated us creatively. It also became one of the core parts of this PhD.

2) Out of Focus, for gender and electronics, by Charles Matthews and Charlotte Pugh

2.1) Background

The piece started as approximately the first 5-6 minutes of our very first improvisation, which had no rules and no time limit. A possible influence was a piece for gender and electronics called *Beautiful Error* by Aris Daryono³, which Matthews had recently been working on, and which we had been listening to prior to improvising. For our next project, we decided to choose a part of the improvisation to recreate as a piece in its own right.

After the session, I transcribed the gender part from the recording, and played it through on my own, and we started recreating the piece at our next session. We worked on the music several times, shaping it into a fixed 'piece'. At the same time as working on *Out of Focus*, we kept up the practice of improvising freely together, using different instruments,

² Susanna Borsch is a leading player of electro-acoustic music for the recorder. She studied in Amsterdam with Walter Van Hauwe. I attended this workshop with her at the Malvern Recorder Festival in April 2004.

³ For this piece, Matthews used a similar sound palette and tools, such as a looper created using Max/MSP, which he went on to customize for *Out of Focus*.

electronic 'tools' and ideas. We also had discussions about related, wider subjects, such as what is a 'piece' of music and what that meant to us. We also listened back to recordings of our improvisations.

2.2) Structure, instrumentation, texture

Figure 2.1) Combined gender and electronics score, created by Matthews:

Out of Focus

Computer score/outline (first draft) October 2011

Bowed notes

5 - 5 - 5

Send to **ret 2 (prefader)**, **freeze**
Raise **ret 2** (running throughout piece, adjust)

A: Phrases

Ⓐ i 5 6 i 5 6
 6 2 1 6
 6
 6
i 5 6 i 5 6
 2 1 6 2 1 6
 6
 6

Send to **ret 1 (prefader)** - subtle reverb

B: Bowed notes

Ⓑ *low* 6 [] i 1111 6 3 6 **Sample first note, introduce during second (1111)**
Loop chan 1, modulation: pitch/amplitude

C: Repeated gender phrases

Ⓒ 1 2 1 3 , 1 2 1 3 , 1 2 1 3 , 1 2 1 3
 6 6 6 5 6
1 2 1 3 / , 1 2 1 2 1 2 1 3 2 1
 6 3 5 6 *loop phrase*
 cue to Charles

Sample, top and tail Loop chan 2. Play kempul until ready to fade in, then play gong

Crossfade dry->wet

D: Bowed notes (improvised)

Sample, Loop chan 3
Granulate, chorus

E, F: Gender phrases

Ⓔ i 5 6 6

Ⓕ 3 5 3 6 6

check placement
5 6 i

End on high 3

Figure 2.1 shows a combined gender and electronics score for *Out of Focus*. The piece has alternating sections of melodic gender phrases played with mallets, and bowed gender notes. The 1st gender phrase is marked 'A: Phrases'. In this section, the tempo varies – slower in the 1st phrase, speeding up in the 2nd and 3rd and slowing down in the 4th. The next section of a series of bowed notes happens just once.

The 2nd gender phrase is marked 'C: repeated gender phrases'. The basic phrases are fixed, but there is flexibility in the number of times they are played. This is because of the necessity of giving Matthews a cue to bring in his loop (the loop phrase is – 2 1 3 2 1). I also need to keep playing these phrases until his loop works, which may not be the first time. I improvise around these phrases and play with the tempo. The flexibility necessary to provide Matthews with a cue has become part of the piece.

The next section consists of improvised bowed notes, in reaction to the sounds that Matthews is creating (which are all based on the gender sounds that I have been making). Then the 1st gender phrase returns and brings a sense of 'full circle'. Finally is the 3rd gender phrase which has a sense of a 'coda' to the piece. The notated phrase 3 5 3 6 6 is improvised on and varies with each version.

Gongs were added in the later versions (firstly for the video), partly because we were playing in the gamelan room in York at the time and the gongs were available. They add a new dimension to the piece by adding new sounds to the texture, and also enabled Matthews (who was playing them) to use them to give me a cue as to when to start playing my loop phrase. See section C on the score – kempul is marked with a 'V' and gong is marked with an 'O'. Matthews also uses a gong cue to indicate that his loop has worked.

The tuning of the gender varies depending on where we play the piece, and the use of different instruments (i.e. adding the gongs and

kempuls) is part of our ethos of using whatever instruments are available, regardless of tuning. ⁴

The structure of the piece emerged directly through the improvisation, and was reinforced through the recreation of the improvisation as a fixed piece. I was surprised to find the amount of structure there was, as I was not consciously aware of it when playing the improvisation.

The texture is simple and static, built out of the sounds of bowed gender, electronically manipulated gender sounds and repetitive melodic phrases and loops. One of our musical influences, which can be seen in the texture, was the Southbank Gamelan Players/Supanggih and Plaid collaboration, which we had recently been performing around the country.

There is a blending of sounds and textures, in which it is sometimes hard to separate sounds made by myself and sounds made by Matthews. This blending of sounds led to the title of the piece – which was my visual description of the images that the piece conjured up for me – images of white light and indistinct colours and textures.

2.3) Analysis of 4 versions of the piece

Figure 2.2 shows an analysis based on comparing the length of each section from each recording. The 4 versions are taken from various key points during the development of the piece and attempt to show the progression of the piece. They are as follows –

- 1) The original improvisation
- 2) A work in progress
- 3) The video version
- 4) The 1st public performance at Gathering of the Gamelans, York, 2012

⁴ This is for me, partly a reflection of the ethos of Sono Seni Ensemble, led by I Wayan Sadra, who I worked with in Java – see overall commentary for discussion of their ethos and music.

Figure 2.2) Analysis of four versions of *Out of Focus*

	1 - Original improvisation	2 - work in progress	3 - video	4 - First live performance
Time at which 1 st gender phrase starts	5s	32s	1.10m	1.48m
Length of 1 st gender phrase (A)	35s	35s	40s	33s
Length of fixed bowing section (B)	47s	50s	42s	28s
Length of 2 nd gender phrase (C)	56s	1.10m	2.30m	1.58m
Length of loop/bowed notes (D)	45s	2.07m		1.55m
Length of 3 rd gender phrase (E, F)	2.10m	1.05m	1.24m	37s
Overall length of piece	5.30m	5.55m	9.30m	8m

Some sections have remained roughly the same length, such as the 1st gender phrase and subsequent bowing. Other sections have changed length – the 2nd gender phrase has doubled in length between the 1st and

3rd versions. The extension of this section is due to the cuing of Matthews' sampled loop (the phrase 2 1 32 1). The loop (which is a live recording of the phrase) would not always work the first time, so we built in a cue phrase (1 2 1 35 6), and I would also need to repeat the loop phrase if the loop did not work. These things extended the length of this section. The amount of time before the 1st gender phrase starts has lengthened considerably, and overall, the whole piece has nearly doubled in length.

2.4) Flexibility, Interaction and Connections to Karawitan

Some parts of *Out of Focus* are fixed, for example, the overall structure and order of the sections. The piece has evolved to have more flexibility in certain sections, particularly the 2nd gender phrases (the 'cuing' section). This flexibility has evolved to facilitate one of the fixed elements of the piece (the creation of the loop phrase). As this loop phrase happened spontaneously in the improvisation and then proved hard to recreate, we had to bring back flexibility (which had to some extent been lost during the process of 'fixing' the piece) to enable something which was originally spontaneous to happen. We had to work out a different way of interacting to recreate this part of the piece. All this resulted in the lengthening of the piece, as seen in the analysis in section 3. A clear connection to karawitan here is the use of flexibility and interaction.⁵ Along with its general sound world, *Out of Focus* has these elements in common with pathetan.

Pathetan has relatively 'free' tempo. The gender part in a pathetan consists of short phrases, which accompany the rebab or singer, either of which leads the pathetan. There are 3 main types of phrases used:

- 1) Gantung – 'hanging around' one note
- 2) bridging/approaching phrases
- 3) ending phrases (to a seleh note)⁶

These phrases may happen in the following order – gantung, bridging, and ending. An ending phrase is typically followed by a gantung phrase – so the seleh note that is reached becomes extended. On the accompanying cd

⁵ See quotation from Sadra in introduction to overall commentary.

⁶ From Supanggah's pathetan workshop at the Southbank Centre, 2008.

(no.2), track 1 is a recording of a gantung ('hanging') phrase, tracks 2 and 3 are bridging phrases, and track 4 is an ending phrase, to a seleh note. Track 5 is the whole pathetan from which these examples are taken – Slendro Manyura jugag, played on gender.

The amount of times each phrase is played will vary, depending on the speed of the piece. For example, one dhalang may sing a pathetan much faster than another, and in that case, the gender player will need to adjust the number of repeats of a phrase to fit. This is also the case with *Out of Focus*, as in order for Matthews to make his loop work, I may need to repeat my loop phrase a few times – this will vary, depending on how quick Matthews is to make the loop, or also on the aesthetics – one or other of us may feel that we want to move the piece on, or hang around the loop phrase more. This also applies to other parts of the piece – the bowing section may be extended or truncated.

The function of the gender part in *Out of Focus* is similar to the pattern of phrases found in pathetan. The phrases are short and repeated. In a pathetan, the gender player will repeat a phrase (for example a gantung phrase), until she/he hears the rebab start to move onto the next phrase. This is how the 2nd gender phrases work – they are repeated until Matthews has indicated with gong or kempuls that his loop has worked, and the piece moves on. There is no rebab or singer performing the function of a leader in *Out of Focus*, and in this particular section, Matthews becomes a leader, by indicating that it is time for the gender to move on. Overall, the interaction between gender and electronics is more equal – we are giving cues to each other. Matthews is following what I play by sampling it and adding effects, and I follow him by listening for his cues.

It is likely that I would play phrases similar to those found in karawitan, as that is what I am most familiar with on this instrument. Before the first improvisation, I had been playing traditional music to warm up and while thinking of what I might play. See track 6, which is a recording of this, prior to the first improvisation session, from 23rd October 2010.

Pathetan can be seen as an exploration of pathet. Brinner suggests that '...pathetan can be translated roughly as doing the mode' (1995,

p.245). Although *Out of Focus* is not intended to be an exploration of pathos, it is another type of exploration – that of sound and interaction. Interaction is not necessarily a function of pathos, but is an intrinsic part of it. Therefore I would suggest that there are parallels between *Out of Focus* (and by extension, many of the improvisations Matthews and I have worked on) and pathos. In a pathos, there are certain key points where the instruments/players need to co-incide (seleh notes), this is the same with *Out of Focus*. For example, Matthews needs to be ready to sample my loop phrase at exactly the right time.

2.5) Collaboration processes – ‘fixed’ and ‘flexible’ music

One of our key aims was to keep our music flexible, evolving and ‘alive’, and to keep it changing. As our music started from a desire to improvise, we wanted to keep those elements, even if we did start ‘fixing’ music. As I will discuss below, I found these aims challenging at first.

During the process of working on *Out of Focus*, different issues came up about how we were working together, for example, the use of notation. I had written out a notation right at the beginning of the process, and always felt that I needed to play from it. As soon as I had written it, I became glued to it and stopped thinking about the initial improvisation. I saw what I had written as now being the ‘piece’. There was a particular gender phrase which Matthews had looped very effectively in the initial improvisation, to me this was the key element of the piece and I was determined that he should recreate it as exactly as possible. This created some differences between us, as Matthews did not think about the gender part in the same way I did. He said, ‘For me the gender phrases were more texture than notes and that is often the case for me.’ I wanted him to loop the exact phrase each time, but I felt that he was not so concerned about it being exact. In later discussion with Matthews, he wanted to clarify his previous statement:

I’m more interested in creating pieces that are different every time, which is another thing, and this

is partly a reaction to working with pre-sequenced, pre-recorded material, which was a lot of my experience with working with electronic music before. Particularly watching people working electronic dance music and they would pretty much have full tracks and they would be miming. But then it needed to be reliable, it needed to be predictable, because you had a club full of people dancing to it, even if for a handful of those people in the audience, the really lovely moment would be when the computer crashed and things went out of time and you had to fix it, and that kind of thing! (Personal Communication, 19th July 2012)

This quotation relates to Matthews' previous musical experiences, which have an impact on the music we have made together.

I was very connected to the notation I had made and committed to an exact recreation of certain elements of the piece. However, I started to feel that it was becoming stale. After a while of working on it, I listened again to the initial improvisation, which I had not done whilst we were in the process of recreating the piece. I had deliberately chosen not to listen to it as I wanted the piece to have its own life outside of the improvisation and I didn't want to become too tied to the improvisation. Ironically, I had now become tied to the notated and fixed version of the piece. When I listened again to the improvisation, I heard that was much more in it than I had notated, and had not remembered this while we recreated it. I decided to put more of these freer and improvisational elements back into my part. I became less attached to the notation and played more of it from memory (this was around the time we worked on the video version). I put more improvisation into certain sections, and the piece felt more 'alive' to me.

Aside from working on *Out of Focus*, we carried on improvising. However, after the first session, I found some of the successive ones less satisfying. I wanted to recreate more parts of the first one, and kept

revisiting it. Matthews wanted to move on more and try new things. I felt very attached to the first improvisation session. Eventually I was able to let go of this and embrace new musical ideas and I became more confident that we could develop our musical language. Previously, I had become attached to our original improvisation because I was not confident that we would not be able to produce anything better, and I was unsure about trying something new. It was only with constant practice of improvisation, in this and other settings, that I was able to find new ways of developing musical material, and became more confident and adventurous.

Another issue that arose was the identity of our roles, and is another example of flexibility. As part of the development of *Out of Focus*, we discussed the possibility of asking other performers to interpret the piece. This led to a discussion between us about the role of the performer and composer, where we fitted in to those roles, and how they might change. When we improvised the piece in the first place, we saw ourselves as improvisers. When we recreated it, we were collaborative composers and performers. We questioned whether in the act of recreating the piece, we went from improvising it to composing it. If we had given the piece to someone else, we would have been co-composers, but no longer performers. How would we feel about this piece, as it would be no longer in our control? These are issues which we did not have time to explore in the time frame of my PhD, but which we are keen to explore in the future.

In a recent discussion with Matthews about differences of approach, he suggested:

I sometimes don't really hear the individual notes in a melody, in the same way I might not expect you to recognise changes in individual parameters I'm working with, like the movement of a filter or grain density (like melody, some might be clearer or more memorable than others). I often feel the process is the piece, and that the notes are incidental, something used to create or represent that process, rather than

the other way around. I think the two approaches can co-exist quite happily but that it's important to find ways to communicate across them. I find that melody is not always the most important part of a piece for me, but that's not to say it isn't important.

Particularly when we're recreating an improvisation, the notes could be completely different each time but, for example, it might be the levels of intensity that make it the same piece for me. (London, December 13th 2014)

I find melody is much more important for me in our improvisations. I do not hear Matthews' processes in the same way that he does and he does not hear my melodies and harmonies in the same way that I do, yet we are able to cross these boundaries to communicate and create music together. For each of us, perhaps it is just 'sound' that we are reacting to.

3) Other improvisations from the collaboration

This section will also include a brief description of each of Matthews' technical processes. All of the following comments from Matthews were taken from a fuller account of his technical processes (see appendix).

These tracks are all recorded with basic equipment, mostly with a 'Zoom H2' recorder, with no extra microphones. Background noise is all part of the aesthetic of our music. Instead of excluding any unexpected or 'unwanted' sounds, we incorporate them into our music. As one of the main premises of our collaboration is to work with whatever we have, we use any gamelan instruments we have, regardless of differences in tuning, plus we use whatever other instruments or sound sources we may have available. None of the recordings are edited in any way, because we see each improvisation as being complete in itself, regardless of anything that may be perceived as an error. Each improvisation is a journey in exploration of various elements - our musical interaction, the musical idea

we are working on, spontaneous elements that may occur (such as ‘outside’ sounds, any decision on either of our part to introduce anything we want into the improvisation), exploring all the possibilities of our instruments/electronics. Each track is a one-off improvisation, which won’t be repeated. However, the basic idea for the improvisation may be repeated and developed (as happened with *Out of Focus*), or translated onto other instruments – as in track 6, which is a recorder version of track 4.

The accompanying CD for this project features 5 different improvisations. The first track is the first improvisation that Matthews and I did, at his home in Palmer’s Green, London, on the 23rd October. The piece *Out of Focus* (track 5 is the first live performance of this, at the Sir Jack Lyons Concert Hall, as part of the Gathering of the Gamelans Symposium in 2012), is taken from approximately the first 5 minutes of this first ever improvisation.

Matthews’ technical processes for this used Ableton Live, as well as a looper he had developed in Max/MSP. He says ‘In [Ableton] Live it’s possible to build up the setup in the course of performance, creating new channels, routing inputs and outputs, recording, assigning parameters to a MIDI controller without breaking the flow. My improvisation in the first half was largely based around creating audio channels on the mixer and dragging various effects from the browser into the signal chain. As the piece progressed this gradually stabilised and I settled into what I had on the screen.’ All of the sounds for this track were taken from the microphone inputs – i.e. what I was playing on the gender and recorder, plus any background sounds.

The second track is an improvisation for gender and electronics. In this track, as in the previous one, and indeed much of the work in this duo, Matthews is using his electronics to sample my sounds and manipulate them. He says ‘The software in this piece was originally developed for

accompaniment of Macapat... I was interested in trying this out without any obligation to fit in with traditional music, and interacting with the gender by playing with a similar set of sounds.' Matthews was using 'a set of sine tone generators designed to mimic a gender... which were played with a set of MIDI pads.'

The third track has a different approach, as in this case, Matthews does not sample any of my rebab sounds, he uses his own electronic sounds, and so this improvisation is a dialogue between two quite separate sound worlds. Matthews says '...this piece was the first time we broke away from generating all the sounds from the microphones, using synthesis instead of sampling and effects... In this recording I am using another piece of software called *Bonangan*, which I developed for my PhD research.' Matthews also played live gongs on this recording.

The fourth track again uses Matthews sampling of my sounds. From my rebab sounds, he uses long delays and feedback to create a sound world in which he interacts with my improvisations. This track was performed live at a concert as part of the Gathering of the Gamelans symposium in April 2012. Matthews says: 'This features a technique I've been using since my early experiments in electronic music whereby reverb is sent back into itself through a send channel on an analogue mixer. With this technique it's possible to generate pitched feedback drones and extend and shape the sound of more conventional rebab. The rebab material through the long delay was coloured by the sound of the room as it's picked up by the microphone and delayed again, so it decayed and became more resonant in a similar fashion to the processes used in Lucier's *I am Sitting in a Room*. I enjoyed playing with this technique alongside the manipulated reverb to create a kind of uncanny space and chorus of rebab parts responding to what you were playing.'

The fifth track is the first live performance of *Out of Focus*, and was also performed as part of the Gathering of the Gamelans symposium in 2012.

The sixth track is a version of track 4 for recorders. The recorder playing in this improvisation was inspired by working on *Another Place*, a piece for recorder and electronics composed collaboratively with Jon Hughes and performed at the 2012 York Spring Festival. *Another Place* used multiple layers of recorder melodies, which were in turn inspired by working (again with Hughes) on a recorder version of the piece *Vermont Counterpoint* by Steve Reich, again performed at the 2012 York Spring Festival. Matthews' technical processes were similar to those used in the fourth track.

4) Appendix: Charlotte Pugh and Charles Matthews - comments on electronic elements

Charles Matthews, January 2015

Track 1 - Original improvisation - source material for *Out of Focus*. Palmers Green, 23rd October 2010 (18.19)

In this piece I started with a blank screen in Ableton Live save for a looper I had developed in Max/MSP for Aris Daryono's *Beautiful Error* (2009).

When using Live I often like to build the setup up in the course of performance, creating new channels, routing inputs and outputs, recording, assigning parameters to a MIDI controller without breaking the flow. My improvisation in the first half of this recording was largely based around creating audio channels on the mixer and dragging various effects from the browser into the signal chain. As the piece progressed this gradually stabilised and I settled into using what I had available on the screen.

As in most of our improvisations, I placed a condenser microphone over the gender that could also be used to pick up recorder. All the sounds were generated from the microphone inputs save for a brief locked vinyl groove. There's also a great deal of crackle from a faulty microphone cable that entered into the sound palette. Quite a few chance/unexpected events

provided inspiration, like rushing to control feedback from the microphone and then looping it to form part of the piece (6:17). The sounds were placed close together in the acoustic space of the bedroom so that the speakers were treated like another set of instruments in the recording setup; the recording was made through a handheld recorder rather than the instrument mic.

I started with drones generated by freezing reverb from the microphone input (a bit like setting the reverberation time to infinity). During many of these pieces I enjoyed extending individual notes to make drones that I could fade in and out as if I were playing keys on a synthesiser.

The gender part was looped live in Max/MSP by recording a segment and then choosing the start and end points visually. The main difference between using this and Ableton Live's default looping functionality was that I could run several of these loops together without having to relate them back to a central pulse/time signature, so they could just run out of phase with each other.

Upon listening back to the original improvisation, I can hear that the gender loop wasn't actually physically played in the way we hear it, but was generated by cutting into the start and end of the notes. With hindsight I believe this was one of the reasons I found it so difficult to recreate.

Later on the gender bowed notes are looped and treated with amplitude modulation (tremolo), an effect I've used prominently in most of our improvisations. I find it's a good way to liven up a texture and impose an additional rhythmic feel (see 9:19), and it also complements some of the gestures possible to produce with the recorder and rebab. At times the modulation is fast enough that it gives a kind of fizzling quality to the sound. When it's slower it introduces more of a rhythmic pulsing. Other effects are introduced throughout the piece such as granulation (breaking the sound down into fragments and repeating them rapidly, changing the pitch), and chorus (layering delayed versions of a signal, modifying the pitch slightly). The recorder is treated with similar effects, along with pitch shifting and ring modulation.

**Track 2 – Gender and electronics improvisation. York gamelan room,
29th October 2011 (8.22)**

The software used in this piece was originally developed for accompaniment of macapat, in particular an arrangement of Dhandhanggula for the Augmented Gamelan set (Matthews, 2014 p. 224). I was interested in trying this out without any obligation to fit in with traditional music, and interacting with the gender by playing with a similar set of sounds. The software consists of three main sections:

- A set of sine tone generators designed to mimic a gender, which I tuned to the instruments at York, leaving some discrepancies to create beating. These were played with a set of MIDI pads (soft tones starting around 0:59 – lower gong-type tones enter at 3:40).
- A second set of sine tone generators based on the spectral content of bonang, but with slow attack times (prominent from around 4:20 until the end of the piece). These were triggered by a pitch tracking program – whenever the computer detected similar notes played through the microphone input it responded by playing the same synthesised note.
- A bank of reverb units with freeze functions, allowing me to fade in and out drones generated from the microphone input (bursts audible at 1:58 and 4:52).

I think I might have been playing the computer pads and joining in on one of the gender at one point, but I'm not sure. I was enjoying focusing on tones and playing the pads as an instrument, rather than using the mouse or MIDI sliders. Later on in the piece it becomes a little more texturally focussed to me as I bring the various parts in.

The microphones were turned up quite loud, so there was a lot of grainy, fuzzy noise from the room and feedback in this piece when I tried to introduce the reverb and drones. This created the noisy texture texture

that fading towards the start of the recording (0:47 – 0:57), and more dynamic of the feedback parts (3:09, 6:00).

Track 3 – Rebab – dialogue. York gamelan room, 27th May 2011.

(20.32)

If I recall correctly, this piece was the first time we broke away from generating all the sounds from the microphones, using synthesis instead of sampling and effects. I don't think any live audio processing of the instruments took place.

In this recording I am using another piece of software called *Bonangan*, which I developed for my Ph. D research (Matthews, 2014 appendix 2). I used it in two other finished pieces: *Bonang Study* (March 2011) and *Tenuous Links* (July 2011), as well as the workshop session with members of Sekar Petak (July 2011). The software generates traditional bonang parts live from a balungan, and also makes matching synthesiser parts designed to be sent through speakers to make the instruments resonate.

In this case I sent the synthesiser parts straight through the speakers and made an arbitrary balungan to create a drone part, acting as a kind of base for our improvisation. The tones that you can hear here are based on a bonang mipil-style pattern with extended notes that fading in and out slowly. My original intention was to sample the rebab and run it through the software as well, but it wasn't working. I think we must have started playing to test it out and just kept going.

I didn't really touch the computer much during this piece, but the monggang-type pattern I played on the gongs matched up with the synthesiser part through listening to it and watching the balungan on screen, while responding to what you were playing on the rebab.

Track 4 – Rebab, long delays and feedback – Gathering of the Gamelans concert, Sir Jack Lyons Concert Hall, York, 26th April 2012

(6.44)

This features a technique I've been using since my early experiments in electronic music, whereby reverb is sent back into itself through a send channel on an analog mixer. With this technique it's possible to generate pitched feedback drones and extend and shape the sound of more conventional reverb. The delay of about 20 seconds with internal feedback was created in Max/MSP.

The rebab material was sent through the long delay was coloured by the sound of the room as it was picked up by the microphone and delayed again, so it decayed and became more resonant in a similar fashion to the processes in Lucier's *I am Sitting in a Room*. I enjoyed playing with this technique alongside the manipulated reverb to create a kind of uncanny space and chorus of rebab parts responding to what you were playing. I used volume faders and EQ to bring additional dynamics to the parts as they repeated. I also processed the delay/reverb part with fast tremolos on the computer to respond to gestures from the rebab (3:40; this is described in the score as "matching tremolos").

In the first studio versions of this piece the bass at the end was created by sampling notes from the rebab or the feedback and pitch-shifting them down. In the recorded performance the bass tones were created using feedback with the bass control turned all the way up, which gave a similar effect (5:45 onwards).

Track 5 - *Out of Focus*. First live performance at the Gathering of the Gamelans concert, Sir Jack Lyons Concert Hall, 26th April 2012 (8.14)

By the time we recorded this version of the piece the hardware and software setup had stabilised – where I felt I was improvising with constructing a virtual studio in the initial improvisation, I was more focussed on processing the instrumental sounds and working within the established structure of the piece. Rather than the simple computer setup, I used an analog mixer and effects I had brought along for the other pieces we were performing. This meant I could focus more on details of the sound and enjoy the creation of drone parts.

With the introduction of the feedback reverb setup I found I could play with the mixer more intuitively than with the track-pad or MIDI controller, and respond to the rich acoustic space in a similar way to the rebab piece on track 4. Since I knew the parts well I found I could make gestures out of them, and controlling a mixer directly felt much more fluid and expressive. There were also some differences in the gender parts as they were sampled and formed the overall timbre and feel of the piece – for example the original drone sampled at 0:28 has prominent harmonics.

Track 6 – Recorder piece (version of track 4) 16th-19th July 2012.
Palmer's green (9.57)

In this recording the technical setup is similar to the live/rebab version (track 4). The tremolos/amplitude modulation are more pronounced and at lower frequencies than in the live recording, in part responding to the different timbre and range of tremolos coming from the recorder parts. The pitch-shifted bass tones seem to have been generated through a live pitch shifter rather than the feedback of indeterminate pitch in the live version (5:15 onwards). In some sections the pitch slides continuously to mimic the earlier glissandi of the recorder (7:50).

Equipment/software list

Track	1	2	3	4	5	6
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Software						
Ableton Live/Max for Live	x			x	x	x
Macapat setup (Max/MSP)		x				
Bonangan (Max/MSP)			x			

Hardware						
Analog mixer				x	x	x
Feedback reverb				x	x	x
Instrument mics (trigger)		x				
Instrument mics (looping/effects)	x	x		x	x	x
MIDI faders	x			x	x	x
MIDI pads		x				
Turntable	x					

Software effects						
Reverb	x				x	x
Reverb freeze function	x	x			x	
Ring modulation/harmoniser	x					x
Autopan/tremelo	x			x	x	x
Long delay				x		x
Adjustable looper	x				x	
Granulator	x				x	
Chorus	x				x	
Synthesised parts		x	x			

