Big Ears 2015

A collaboration between Sonic Arts Research Centre, Queen's University Belfast and Drake Music N. Ireland.

The Big ears project is conceived by Dr. Franziska Schroeder.

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Thanks to Dr. Brendan McCloskey and The Drake Music Project Northern Ireland CEO Dr Michelle McCormack.

Curated by SARC Phd researcher Koichi Samuels.

Evaluation Report 25 – 27 March 2015

By Aonghus McEvoy

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Introduction

Big Ears is a project initiated by Dr Franziska Schroeder from the School of Creative Arts, Queen's University Belfast in 2011. The project seeks to engage both specialist and non-specialist audiences in activities relating to new music technologies and the wider field of Sonic Arts.

Big Ears 2015 was held under the theme: "Designing Inclusive Interactions" and took the form of an exciting new collaboration between SARC and The Drake Music Project Northern Ireland, a charity working for over 20 years to enable musicians with physical disabilities and learning difficulties to independently compose and perform their own music through technology. The programme took place over 3 days within SARC, bringing together student musicians, engineers and programmers alongside musicians with disabilities to collaboratively create and develop prototype accessible interfaces, using these interfaces to create an improvised electronic music ensemble performance.

This documentation takes the form of an ethnographic account of the project in which I worked alongside the interface designers and interviewed musicians in order to provide an overview of the process of the project while exploring issues of collaboration and inclusivity. Closely exploring the process of interface design and interviewing musicians with regards to their thoughts on the outcomes of the project also allowed a plotting out of the benefits and challenges of working in this manner. Big Ears 2015 brought together musicians and associates from Drake Music with students and artists engaged in practices relating to music technology and sonic arts. Associates from Drake Music guided the project through from beginning to end, musicians outlined the parameters of the interfaces they would need while music students and programmers fulfilled the role of interface designers and builders.

Day 1 Overview (25/03/15)

The morning begins with an introduction to Big Ears and the work of Drake Music. Dialogue concerning this specific project is initiated by musicians who have worked with Drake in the past relaying their experiences of music making and preferences concerning physical interfaces to facilitate their musical performance and composition. People's positions regarding mobility and communication are discussed in an open manner allowing those inexperienced with this type of project to become accustomed to how specific musicians' needs can be met. A more generalized discussion regarding the types of disabilities or challenges which may affect people engaging with the Big Ears project also takes place to increase familiarity with the area and to dispel any assumptions which participants may have held.

Michelle McCormack, founder of Drake Music Northern Ireland, presents the project as primarily focused on engagement with musicians. After a brief overview of Drake Music's work and ethos is given the musicians are asked to discuss their experiences with past projects and the types of interfaces that would best suit their needs. Ruben Gibson discusses his preferences concerning musical instruments explaining that he wishes to primarily use interfaces to compose music, which will then be manipulated in live performance. Ruben also discusses different kinds of motion controls and explains his experiences of sensors that focus on eye movement as being uncomfortable and tiring to use. Another musician, Ray Hamilton, whose primary method of communication is through eye movement agrees with Ruben that interfaces which focus too much on the eye can be very tiring. During the discussion it emerges that in past projects connected with Drake eye motion controllers were very exciting for developers to incorporate but on the whole were uncomfortable for musicians. The group then discusses pieces of technology designed and mass produced for this market. The *Skoog* is one such instrument, which is brought up; a malleable object operated by touch or squeeze and with a toy-like presentation utilizing primary colours. Many musicians who have had experience with the instrument felt it was not age appropriate. Other musicians express their preferences in terms of the roles they wish to take in the project; Stephanie Jones is happy to participate but doesn't want to be the ultimate focus of attention. Her ideal role in the project is to collaborate on an interface that other people may also use.

We take a break and I sit for a discussion with the group I will work alongside. Each one of the interface designers I speak to has some third level training with regards to sonic arts, music technology or inclusive music making. Our discussion includes Stephanie Jones and we ask for a clearer idea of the kind of interface,

which would be useful for her and other musicians she has previously played alongside. Stephanie explains she has experience playing keyboard instruments yet has found that quickly moving from one note or chord to another could be challenging. Stephanie also explains her preferences with regards to sound palettes and general musical interests. Together we begin to outline ideas for the most suitable interface designs and the types of music or sounds Stephanie is interested in making. Following this break comes a session in which basic training with regards to Arduino and Max/MSP is conducted.

Moving into working on the interface our group discusses what may be the best types of sensors to base the interface around. The possibilities of breath, hand, touch or leap sensors are looked at and need to be chosen dependent on Stephanie's preferences, the time constraints of the project and available hardware.

Day 1 Evaluation

Speaking about the project, Drake Music's ethos and challenges regarding technologies and interface design has been informative in terms of general considerations for the project, however, informally discussing interface design and musical preferences with Stephanie Jones has given the group I have been placed with the clearest and most concise directions regarding their direction for the rest of the project. A lengthier discussion, allowing time to collaboratively construct a clear basis for an interface design in a more concrete manner than an informal discussion of preference seems that it would have been beneficial. While the musician's needs are to the fore of the project, the previous experiences of participant designers, the availability of time and the availability of hardware also affect interface designs.

Day Two Overview (26/03/15)

The second day of the project begins with a lecture on the *Max for Live* and *Ableton* programmes conducted by Brendan McCloskey to ensure all groups can begin working on their interface designs as quickly as possible.

The group I am working in looks at the possibilities of using capacitive sensors controlled by motion and breath. As Stephanie has mentioned that she would prefer if the focus were not solely on her and the instrument design could potentially be useful for other musicians the group has decided to address this by attempting to integrate a variety of controls which facilitate both Stephanie's needs and the needs of other musicians she had mentioned in passing. By building an interface controlled by more than one type of sensor, our group hopes the design can be of use to musicians with varying sets of abilities. An interface design of this type will also have the capability to facilitate collaborative performances. The group then filters down to a single area of the interface and begins work; I move around the room to speak to other participants about their designs.

Kim Ho and Hugh Sheehan, who are collaborating with musician Ray Hamilton, have made plans to design an interface, which works with head, eye, and hand movements. Their design will account for Ray's mobility and will allow a range of controls from head movement such as pressure, angle, roll and movement type alongside an on/off switch for the right hand. As Ray prefers composition to live performance the group have decided to focus on controls allowing Ray to arrange notes and rhythms with the option to create multi track recordings. In terms of live performance they wish to create an instrument with which the parameters of these pre-composed recordings can be manipulated. We discuss Ray's input into the interface and the group is happy that Ray has given detailed input and clear guidance with regards his preferences of digital instruments and musical performance.

I return to the group I have been working with on Stephanie's interface. They have begun to question the initial design and try to work out how the final interface will be constructed and rigged to the musician; too many sensors may be overly complicated to be put together in this short time frame and end up being uncomfortable for the musician. We now begin to discuss the musical parameters of the interface. It is decided that a tabletop set up will be best to embrace her experiences of using keyboard instruments. It is decided to simplify as a multi-channel, multi-sensory design will not be achievable in the time available.

Richard McReynolds and Helena Hamilton, who are working with musician MaryLouise McCord, are designing an interface, which is controlled by upper body and hand movements. Helena Hamilton has begun to look at using a webcam and lights which can be moved by the hand to do this as she has experience building

instruments of this type but is aware of not implementing her own aesthetic preferences on the project. However, MaryLouise has expressed an interest in an instrument, which is focused on gestural and performative aspects so the choice seems to be appropriate. I discuss with the group how MaryLouise has influenced their interface design and they tell me that in their conversation MaryLouise was willing to try anything out but was unhappy to work with devices like the 'Skoog'.

I sit with Ronan Killough and Edward Butt who are building Ruben Gibson's interface and they outline their ideas for its design. They hope to develop an instrument that will allow Ruben to programme sequences and control their parameters in real time, possibly through the use of two switches, a touchpad and a joystick. The group mention that Ruben had been specific about wanting to control and manipulate material live. The idea for this interface has mainly been predetermined by the musician according to problems Ruben has had with those he has utilised in the past. The group wished to incorporate the *Roland TR 808* in the final interface design, allowing the parameters of *Ableton* and the *Roland TR 808* to be manipulated by midi signals and a joystick.

I return to my group and see how the interface has developed. Variable elements of the interface design such as joysticks and breath sensors have not been used as we are unsure as to whether the instrument will be played by any additional musicians asides from Stephanie. To successfully complete a design within the time frame we have opted to focus on an interface which is operated by keys and one motion sensor along with one LED to show the sensor is in operation. Stephanie has stipulated that she finds instruments with flashing lights uncomfortable to use so the group has taken this into account in their design. We have decided on a colour pattern of black and yellow for the visual design of the interface so it appears playful but not childish.

The designers working with Ray are now building a controller for the interface and have slightly changed the parameters he will be controlling, simplifying the interface to a process by which sound is triggered by hand movement then altered and manipulated by head movement.

MaryLouise's group has run into technical problems and have decided to use light as a tracking device for a webcam. They express that they initially wished to construct a light glove but instead will simplify the design to an LED strip, which can be attached to the hand to control sound while a pressure sensor will allow the other hand to control volume and delay. Ruben's group have also run into difficulties with materials and programmes, they are trying to fix errors they have made programming *Arduino*.

Day 2 Evaluation

Over the course of the day we have seen initial designs increasingly altered mainly due to time constraints and to a lesser extent hardware availability. In some cases designers struggled to utilize programmes with which they were unfamiliar, the use of which overlooked their experience and familiarity with other modes of working. While different facets of designs are culled out of necessity a lack of contact with musicians has meant that designers have not had input with regards to which elements of the initial design were integral for the end user.

The main issue presented to me by designers has been availability, both with regards to personal availability and the time constraints of the project. Unfamiliarity with the chosen software in the project which did not employ past experience or different modes of working also took up significant amounts of time for some designers which they felt could have been better spent on other elements of the interface build. The availability of material resources for the interfaces such as joystick controllers was also an issue.

Day Three Overview (27/03/15)

The morning of day three begins with groups of designers finishing their interfaces. I sit with the group working on Stephanie's interface. They are now experimenting with two types of motion sensors due to problems integrating the leap motion sensor into the design. Time constraints have dictated a simplification of their original design. Another issue the designers consider is that Stephanie may not be happy to perform on the interface alone. These uncertainties have arisen from a lack of input during the design process and a lack of knowledge as to whether the other musicians Stephanie initially mentioned to be included in the interface design will be present today.

At midday those who have finished their designs gradually move to the Sonic Lab. Some musicians experiment with their instruments while others wait around. Those with instruments to set up modify sound content and interfaces to their needs along with the help of designers. It seems problematic that there is a disparity of testing and waiting due to timing issues. Perhaps associates need to be allowed a longer period of working in order to allow adequate time to experiment with instruments and prevent a situation which leaves some musicians with little to do in an unfamiliar space. Between three and four o'clock we set levels and wait while issues with sound in the room are dealt with.

I speak to Ruben, asking for his thoughts on the outcomes of the project so far. He feels the sound of his instrument is not yet right but doesn't think anything else would have been possible in the time constraints of the project. However, he's still happy to have some fun with it and try out and perform with the instrument.

At twenty to five Brendan McCloskey initiates the groups first attempt at composing a piece for performance, acting as a conductor. The structure of the piece is based around Brendan calling musicians to come in one by one, then improvising around a set parameter of notes and rhythms. Currently the piece begins with Stephanie, each musician is gradually added to create a crescendo effect and then moves to the introduction of rhythmic elements. I speak to Michelle McCormack who also spoke to Ruben and heard his issues with the time constraints of the project, its impact on his instrument and his ability to perform with it. A discussion then takes place in order to outline the concert program collaboratively.

As we move towards the concert opening time an acousmatic composition is played over the system for participants in order to demonstrate a piece of music considered typical of the work which takes place in the Sonic Lab.

The concert begins and the program consists of two renditions of the piece, which due to its loose structure allows for an element of improvisation and diversion for participants. There is then a presentation of each interface, the process of design from the musician's initial wishes through to how the designers interpreted this

through to a demonstration of each musician playing their interface. This is done from group to group and allows non-participants to see the manner in which the interface and musics were collaboratively produced. The concert closes with a second rendition of the piece. This performance has a greater dynamic range and is more varied than the initial realization, the second performance possibly allows musicians to explore the parameters of their instruments to a greater degree and exposes the improvisational nature of the piece to the audience. Having seen two versions of the piece it is also easier for the audience to identify the actions of different musicians to see the potential flexibility of the interfaces. The concert programme now concludes and participants and non-participants in the project socialize in the lobby allowing for an informal discussion of the project.

Day 3 Evaluation & Levels of Participation

As a participant in the project moving around the building in the lead up to the concert there were issues of timing related to the finishing of interfaces. As some musicians tested out their instruments others were left with little to do for an indeterminate amount of time.

In terms of interface design musicians stipulated their wishes and needs regarding interfaces at the outset and associates attempted to stick to this briefs as closely as was possible in terms of availability of resources and time. The concert allowed a brief period in which musicians could speak towards the effectiveness of the interface and last minute modifications could be made in order to facilitate their concert performance. In some outcomes it was apparent that flaws in interface design could have been avoided through some form of engagement mid way through the process of design and building. While a brief may be followed direct physical interaction with the functional elements and a period of listening to its sound contents would allow modifications in the design to be fully developed and integrated into the process.

The open nature of the composition presented in the concert allowed for a high level of interpretation and improvisation in the music making process however this manner of working also meant that those whose interest lay in developing compositions and prerecorded material did not have much time to prepare this.

In terms of the programming of the concert an attempt at a discussion and group decision was made, however, due to the time constraints and impending concert time, decisions regarding these issues were largely predetermined.

Conclusion

Big Ears 2015 created a space where musicians, students and professionals engaged in a collaborative process resulting in a sharing of experiences garnered from a variety of perspectives. Dialogue between interface designers and musicians allowed the core of the project to be one which was transparent and inclusive of all parties throughout the project, resulting in an end presentation which could be shared between all participants.

Appendix

Friday discussion over concert program (transcription 27/03/15)

Michelle McCormack:

To be fair to ya, I think you've all really really responded to it, and just, as I say, from somebody droppin' in there's been so much listened to from Wednesday morning that we can see in what has been built and it's really important and it's really important that the audience get to see, and hear, and get to learn about that process. The product is all important as the music, the process is all important as well because we want to do this again and again and again, and I've talked to Ruben, and I know we want do it again because we want to do it slightly differently and we want to do it again because we want to do it four other ways and we want to do it again because we've gotten six other ideas now. So the more that you sell this tonight, a: to get credit for the work that you've done and b: to make sure you get to do it again. So genuinely, in your instrumental groups, have a wee think about the half dozen sentences and really make it strong when you stand up and be proud from where you stand up or speak out from about what you did in your group. Talk about where it started, talk about how you went about it, how it was decided, talk about how you went through that process over two days; got very little sleep, more sleep than I thought, I have to say there should have been more people here after half seven last night (laughter), and say what it sounds like now, and don't be afraid to say "and really want to do x, y and z more with it". So that part, because this is a performance that people are coming for so we don't want it over in four and a half minutes so this process and discussion is very much a part of this whole demonstration and performance. Alright? So have a chat in your groups and make sure everybody's voice is heard in some form or fashion. Very few of you have met Judith, I'm going to embarrass her by singling her out, Judith travelled down from our Newry workshop space today to join us today and luckily Koichi knew on a different level altogether who it was he might have been meeting and the two, marriage made in heaven, the interface is working beautifully, so Judith can blow the whole cover this evening by saying "I didn't really turn up Wednesday at all, these things were sitting in a box, they ordered them off Amazon and they're only conning every single one of yis" (laughter)… If you say that, we'll all be broke. So

Koichi Samuels:

We'll take maybe twenty minutes to discuss how we'll present the interfaces?

Michelle McCormack:

We've talked about overall what the whole shape of it may be: play the piece, introduce the interfaces and finish by playing the piece again. What do you think? Too much to do the piece twice? Happy with that (agreement) You guys? (agreement) Ray?

Ray Hamilton:

Yes.

Michelle McCormack:

Mary Louise? Two chances to show off? (agreement)

MaryLouise McCord:

Yes.

Ruben Gibson:

I think it's too much…

Michelle McCormack:

Too much to do the piece twice?

Ruben Gibson:

Yeah.

Michelle McCormack:

I worry that if we do it once and then explain the interfaces people are going to want to actually hear it one more time and watch out for what is happening but it's up to a vote…. What do you think?

Edward Butler:

And it'll be different, don't you think… each time…

Michelle McCormack:

Slightly different, what do you think…. Could you be persuaded, there's no royalties for repeats by the way…

Ruben Gibson:

I don't care…

Michelle McCormack:

You don't care? Hahaha… you get me involved in these serious conversations and then you… hahahaha.. and I bite every time…

Ruben Gibson:

Do you know what? Do what ya want!

Michelle McCormack:

Thanks Reuben! (group laughter). Stephanie, what do you think? Would you like the chance to play it twice? It's not the same piece as Ed says.

Stephanie Jones:

I won't remember the same piece twice haha!

Michelle McCormack:

All the better! There's a very good reason for it to happen twice, as it will be different, is that fair enough? (group agreements).

I'm just going to… Again another things as an ensemble about making sure everybody is facing the audience, nobody's too far sideways on.. You're probably a wee bit limited with cable but if you wanted you could reverse a slight bit Reuben and the audience will see the people behind you, things like that are very important because we talked about making sure that the performers all get credit, so make sure you can be seen. There's no doubt Mary Louise is going to be seen (agreement), so have some chats.. (directed at Koichi and Judith) You're going to have a good one now if you have to talk about what was happening before you were even here! (laughter)

Interviews with musicians and participants

(Each group is initially asked to outline their experience of the project and to describe the interface they have built)

(A) - Ruben Gibson and Ronan Killough

Ronan Killough:
On Wednesday Reuben had a few ideas about what kind of interface he would like and really he just wanted to be able to control some of the parameters of an instrument in ableton....

Ruben Gibson:
...Yes

Ronan Killough:
But given we only had about two and a half days...

Ruben Gibson:
Yeah it was sort of... not enough time to do... that.

Ronan Killough:
Yeah, so really what we managed to get done in two and a half days was just to allow something that allows Reuben to control... the way he gets around anyway and control some parameters of an instrument in Ableton but eh... It's really more of a live thing than him being able to compose something beforehand and then mess around with it later...

Ruben Gibson:
Yeah.

Aonghus McEvoy:
Do you feel Ruben if there was a day where you could see the work still in progress and you...

Ronan Killough:
To direct the work as it was happening...

Aonghus McEvoy:
Yeah because over the three days we had a start point and an end point, and you were at the start point and end point…

Ruben Gibson:
Yes?

Aonghus McEvoy:
Do you think it would be helpful if you got to see the middle of the project as well?

Ruben Gibson:
Yeah, sort of, yeah.

Ronan Killough:
You'd be able to direct it more towards the kind of thing you want.

Ruben Gibson:
Yeah, but in such a short space of time, it wouldn't be feasible, still.

Ronan Killough:
Yeah because the start point is Wednesday, the mid point's Thursday and the end points today so…

Aonghus McEvoy:
Well I just meant in an ideal situation.

Ronan Killough:
In a longer time span.

Ruben Gibson:
Well really it could be possible but that's all. It could be possible, but you never know if it is actually possible.

Ronan Killough:
To get something that would really be able to let you control what you want to control?

Ruben Gibson:
Yeah.

Ronan Killough:
But it would take a really long analysis and design phase.

Aonghus McEvoy:
Do you still feel happy to perform on it though?

Ruben Gibson:
Yeah.

Ronan Killough:
Haha! He's willing to humour me.

Aonghus McEvoy:
Did you have fun rehearsing your performance?

Ruben Gibson:
Yeah… humoured.
(laughter)

Ronan Killough:
He can watch me break into a sweat when it stops working.

Aonghus McEvoy:
What did you think of the overall project, for both of you, did both of you get much out of it or?

Ronan Killough:
Yeah well I got, I haven't been that stressed in a while (laughter). It's just severe time constraints but I love working on this sort of stuff and if it can possibly be of use to someone then that's me happy.

Aonghus McEvoy:
Do you feel you got anything out of it Ruben… or… anything different?

Ruben Gibson:

Um, not quite but again if it was perfected enough or if we had infinite resources or something like that, I would say yeah, it could be…

Aonghus McEvoy:

Well maybe if you didn't have infinite resources but we had the ability to work again on the same project in a month or two's time, and take the work and repeat it, do you think that might help?

Ruben Gibson:

Yeah.

Aonghus McEvoy:

I know we'd never get two weeks or three weeks to work on it but maybe if it was a more continuous…

Ruben Gibson:

Yes.

Ronan Killough:

Yeah, because I think you liked the concept of it, the idea of it but eh…

Ruben Gibson:

Yeah.

Aonghus McEvoy:

Was it different than something you've played before or?

Ruben Gibson:

Yes, it was quite different…

Ronan Killough:

Different than anything else alright.

(B) - Stephanie Jones and Sedelle Wagner

Aonghus McEvoy:
If you could describe the interface?

Stephanie Jones:
Well there's keys on it, they're not really small, and you don't have to press hard to make a sound. It's very easy to use your fingers to play the keys easily and there's another thing, where you can get a sound and play at the same time without actually hitting the keys using both your hands which is good.

Aonghus McEvoy:
Is it similar to what you thought you might like?

Stephanie Jones:
It's not similar to what I thought but I think it's better.

Aonghus McEvoy:
You think it's better?

Stephanie Jones:
I think it's better…

Aonghus McEvoy:
And you had fun playing it?

Stephanie Jones:
I did, and had a lot of fun playing it.

Aonghus McEvoy:
Did you feel you had long enough to work on it?

Sedelle Wagner:
I feel yeah…

Stephanie Jones:

Well I think it's better. You can get different types of sound.

Sedelle Wagner:

Different types of sound and suit it for yourself?

Stephanie Jones:

Yeah.

Sedelle Wagner:

Yeah, basically it's four touch sensors. We've rigged it up to an Arduino. We've got an infra-red sensor as well and they're both kind of playing off each other working in Max and Ableton Live, so we let Stephanie choose what type of sound she would like…

Stephanie Jones:

Yeah.

Sedelle Wagner:

So we went with some type of pad synth sound.

Stephanie Jones:

Well which I wasn't really too keen on.

Sedelle Wagner:

Oh really?

Stephanie Jones:

But we went through other ones. The guitar I liked but then we went for the one that was sort of like… more classical sounding.

Sedelle Wagner:

Yeah, it was more like strings.

Stephanie Jones:

Yeah strings, which I thought was the best.

Sedelle Wagner:

And that's what we went with…

Aonghus McEvoy:

And are you happy with the composition? Are you looking forward to playing it?

Stephanie Jones:

Yeah, I'll give it a shot.

(C) - Ray Hamilton and Hugh Sheehan

Aonghus McEvoy:

Were you happy with your instrument?

Ray Hamilton:

Yes.

Aonghus McEvoy:

And the composition is good?

Ray Hamilton:

Yes.

Aonghus McEvoy:

Can we get someone to describe the instrument?

Hugh Sheehan:

So, we've got a kind of curved headpiece which goes on the side of Ray's head, and it's got three pressure sensors in there which kind of interplay, and read the pressure that Ray puts on there and that in turn controls the velocity and volume of an instrument of his choosing. We also built a hand-switch which was originally for triggering sampled sounds but upon running the instruments past Ray we're thinking of changing that to a selector, so he'll select a sound with his right hand, by touch he'll run through a list, once he's got his chosen sound he can then kind of bring it in and out. You've actually got quite a bit of control and articulation with your head… so he's able to really dynamically bring in and out the sounds that he's playing.

Koichi Samuels:

Where do you have the switch?

Hugh Sheehan:

The switch is here. Well that's kind of still in the development process so it's something to work towards anyway but for the minute we've got this controlling string sounds, Ray likes string sounds and flute sounds, basically orchestral sections so that'd be the ideal, to be able to switch through all the sections and then be able to control them volume wise and perhaps other parameters as well when we've mastered that.

Aonghus McEvoy:

So you think it might have helped to have had more time?

Ray Hamilton:

Yes!

Hugh Sheehan:

Yeah, I think so too.

Aonghus McEvoy:

And give you a chance to compose with the instrument?

Ray Hamilton:

Yes.

Hugh Sheehan:

So Ray was telling us about a computer he has at home which has a screen but then the screen can slide down as a touch interface. So we were talking about using that as an interface to select tools and then using the headset to compose with it. So it's something we'd like to carry on if it's possible and try both better our skills with the tools that we've got.

Ray Hamilton:

Yes.

Aonghus McEvoy:

So is the instrument better or worse than what you've played before… how will I word this?

Ray Hamilton's Assistant:

This is the first time Ray's actually been able to do it himself without a helper helping him, so it's the first time he's ever solely done it himself…

So it's better to have full control.

Hugh Sheehan:

That's one of the things we discussed on Wednesday was that: Ray having control over his compositional process and his performance process, so being able to make the decisions himself and control sound himself. So that's what we worked towards really and I think there's a bit of a way to go yet… but I think there's a bit of a way to go to get you as much control as you want but we're on our way there.

a loose arrangement of improvising musicians from Dublin, Ireland.

Aonghus McEvoy:

I'm looking forward to seeing the piece now…

Hugh Sheehan:

Yeah!

List of Participants

Ray Hamilton

Kim Ho

Hugh Sheehan

MaryLouise McCord

Richard McReynolds

Helena Hamilton

Danny Todd

Stephanie Jones

Shane Byrne

Sedelle Wagner

Aonghus McEvoy

Ruben Gibson

Ronan Killough

Edward Butler