

Improvisational approaches: improvisation in composing, performing and working with assistive technologies.

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Between 2006 and 2013, whilst teaching together at University of South Wales in Cardiff, Challis and Smith adopted improvisation as a strategy for both performance and composition within a context of testing and calibrating new instruments for users with various abilities and needs; working towards the shared goal of musical inclusivity and participation. Challis's background is in digital musical instrument design and accessibility and Smith's background is in musical inclusion through, amongst other strategies, participation. This combination of research and practice was also used as a framework for teaching improvisation to Undergraduate Students in Popular Music where techniques, technologies being explored within the classroom were taken into a rich variety of community settings.

Keywords: improvisation, composition, performance, education, assistive technology

Introduction

The purpose of this article is to illustrate the authors' use of musical improvisation in different contexts; pedagogically in teaching, professionally in creative outputs but also in instrument design and testing. After becoming colleagues at the University of Glamorgan¹ in 2006, we began working professionally together creating improvised performances and accepting commissions for soundtracks to films (Wyn Mason, Inga Burrows, Sean Tuan John) and mobile gaming (David Banner/Little Old Lady Games). Our live work tended to focus on the use of linked-systems (interconnected and time-synced electronic instruments); experimenting with these in performance to see where they might take us. Our studio work was also often based on interacting and improvising with technology but, in the case of our dance score

¹ Now renamed University of South Wales after merging with University of Wales Newport in 2013

commissions, also involved responding to the gestures of choreographer and dancers. These same improvised musical strategies were then worked through with Undergraduates who took the improvisation works, techniques and linked musical instruments into community and inclusive settings. In doing so, they would ultimately design, coordinate and participate in music making workshops that could allow for a broad range of abilities and occasionally quite specific individual needs. These included community groups for individuals with head-related trauma, care homes for the elderly, Special Educational Needs schools but also adult education centres where participants may have every limited experience of playing musical instruments. Improvisation, as a strategy towards something fixed or more 'composed', or as an end in itself, was always at the heart of this practice. The acknowledgement of its centrality, even when not a stand-alone end-product, was reflected in our naming of a third year university module *Improvisational Approaches*.

Challenges to teaching improvisation

When referring to teaching improvisation it is quite usual for individuals to point out that improvisation cannot be taught or, if they are more inquiring, to ask *how* improvisation can be taught as it is meant to be spontaneous ('how can people be taught to be spontaneous? Surely one just is or isn't!'), heedless of technique ('since technique is learned and therefore surely is a barrier to 'natural', spontaneous expression') and authenticity ('I just play what I feel, what comes naturally'). Unpicking these assumptions can easily become a pastime; in conversation, in theory and in practice. It is perhaps more useful to replace the idea of 'spontaneity' with that of 'fluency'. Ideas need to be explored, assessed and those that the improviser finds most useful can be stored away for further use and exploration. Many people's first forays into musical improvisation are from within a genre and they might think they are really expressing

themselves, whereas in reality they have digested a varying amount of idiomatic musical gestures or tropes and, at best, are varying them within limited parameters; already selected for themselves via exploration and variation. This can be really productive, and is in fact broadly in line with what Bailey (1992: 39) calls an ‘improvising principle’ where anything that is fixed or pre-composed acts as a ‘starting point, a guide’ but the ensuing performance takes precedence over any ‘scripted ideal’. These players are exploring a style, synthesizing elements of it and coming up with new material within that style. It is amazing how many burgeoning rock guitarists ‘express themselves’ entirely within a blues idiom, whether or not they actually have any cultural link to that idiom. However, this is not unusual; this inventing from within a (albeit non-semantic) language rather than trying to invent one’s own language and grammar. To illustrate this further, it will be useful to consider a notion of ‘idiomatic’ versus ‘non-idiomatic’ that works for the teaching of improvisation. An example of a non-idiomatic context would be Stevens’ method of stripping away technique and acculturated musical learning by returning to basics (see ‘Click Piece – Stevens [1985: 46]) as opposed to groups such as Grand Union who tend to work with musicians’ cultural knowledge and experience, or the pedagogy of North Indian classical music whereby a guru will impart their own musical interpretation of, for example, a raga or tala to a pupil, but in such a way that allowed for re-interpretation.

It is also useful here to think of North Indian ragas which are ostensibly just scales for improvising on but, in reality, are a set of melodic possibilities and implications conjured out of, and strongly associated with, a note-set. Two ragas might share an identical pitch set but the weighting of notes within the set, the melodic shapes and directions, the overall mood of the piece may be entirely different. This is the

beauty of the North Indian musical theory system ([Bailey 1992: 4-5]; also see [Sanyal and Widdess 2003: 6-8, 239-276] ;[Malm 1967: 70-72] and [Joshi 1963: 20-27]).

More abstract forays into musical improvisation can be explored by challenging the ‘givens’ of musical theory and the sound producing processes of instruments themselves. *This is what the instrument is supposed to do but what else can it do? How else can it be made to sound?* And finally, different schools of free or abstract improv have their own protocols around interaction, energy and physical commitment; compare and contrast Fire Music² and Lower Case Improv³ for instance. ([Borgo 2007: 20]; [Young 2009: 137-144] and [Warburton 2005: 113-116]). The improvisers’ personal bibles themselves, beliefs and perceived truths strictly adhered to, discovered for oneself through exploration on one’s own or with dedicated others, can themselves collapse into a catalogue of negatives - lists of what one cannot do - and then how can this be free improvisation.

Surely for people to be exploring self-expression and autonomous creativity, one can at best only create the *conditions for learning*. This pedagogical field of teaching musical improvisation can be approached didactically (you will learn these phrases

² ‘Fire Music’ is a term borrowed from the title of a 1965 album by Archie Shepp and applied to the energetic style of improvisation practiced by many (usually African-American) US musicians during the 1960’s, 70’s and beyond. The style is typified by performers such as Shepp, Cecil Taylor, Albert Ayler, John Coltrane (particularly on *Ascension* 1965) and many others.

³ Lower Case Improv is a movement within free improvisation dating from the mid 1990’s which is usually sparse, slow moving and minimal as typified by The Sealed Knot in London (their style was often termed The New London Silence), Burkhard Beinz in Berlin, and artists associated with Erstwhile Records in the United States and Mego in Austria.

thoroughly, learn how to deploy them and then, at some point, you will begin to create your own ideas that follow on from them) or in a very open way (explore your instrument, the acoustic, your relationship with other players and store away what you find useful). Personal experience favours exposing improvising learners to a range of these approaches and allowing them to find their own *modus operandi*. (see also [Stevens 1986: 1-2] and [Bailey 1992: 118-123])

Challenges to accessible music improvisation

Beyond the challenges of ‘teaching’ improvisation, there are additional barriers to be addressed where there is a need to make opportunities for music improvisation that is inclusive to those with physical or perhaps cognitive challenges. There is a growing body of research that documents the benefits that can exist for individuals who are able to engage with collective music making activities and it is clear that assistive music technologies have a role to play here (e.g. [Anderson 1996]; [Ellis 1997], [Hunt 1988] and Swingler [1998]). ‘Assistive’ in this context is often associated with those technologies that can be seen as enabling and are potentially rehabilitative for people with cognitive, physical or sensory challenges. Our experience suggests that there is a broader context to consider though, as these same technologies can be similarly enabling for those who would not ordinarily identify themselves as ‘musical’. The benefits here may be seen by way of greater social inclusion or a better sense of general wellbeing as associated with ‘survivorship’ in healthcare for example.

Where there are opportunities to technologically assist the individual within improvised music there will also be questions over the extent to which the technology is driving the interaction and therefore the overall experience. Healey (2005) refers to this as a question of ‘ownership’ and suggests that in some circumstances quite simple or imperfect exchanges will be more meaningful in terms of ownership than those that are

perhaps complex or seemingly ‘polished’ by assistive means. This has posed additional questions for us in terms of how best to understand the extent to which technological assistance impacts upon creative and expressive processes and there are contrasting perspectives we have explored within this: assessing mainstream technologies as ‘assistive’ (e.g DJ technologies), assessing novel technologies (e.g. research informed) and exploring the repurposing of affordable technologies (e.g. gaming).

Teaching musical improvisation to undergraduate students.

Our approach to teaching improvisation with undergraduates has been to find some comfort zone, such as groove-based improvisation (Keil and Feld 1994: 22-23, 55) and gradually move in a more abstract direction from there. A frequent experience in such teaching is to find students falling into one of two camps. Those who can confidently and fairly freely improvise melodically in a largely unstructured way using their ear and some limited music theory knowledge and those who really *want* to be able to improvise but are ultimately scared of ‘getting it wrong’. We also try and investigate the idea of collective groove improvisation by getting the players who are holding down the groove to vary what they are doing, improvise within their structurally important role and improvise alongside those who are notionally ‘soloists’ in the way that a good jazz rhythm section would. The chord sequence is the map but the variety of ways from A to B is varied and potentially endless.

From this might flow the exploration of more unusual (to Western pop music ears) modes or scales, asymmetrical rhythms and the exploration of drones and ‘static’ textures. Finally, we look at the more abstract forms of improvisation, backed up by work on various theories and philosophies of improvisation looking at the question *why improvise?* Not all students find the abstract forms of improvisation comfortable, especially at first, but a surprising number warm to it as they try their hand at it. We

usually give students a listening list in preparation for this phase of exploration, sometimes tailored by instrument, so that they are immersed in the various languages of free playing. This can be quite a shock to some students and the reaction to it can be quite forceful, denying it any musical value at all, condemning it as anarchy or (most interestingly) musicians who thought their approach was really radical being aced by this cacophony.

We have also run sessions exploring the philosophies of improvisation where we examine a range of artists' written and otherwise professed reasons for improvising their work. In this context we have found Corbett's *A Listener's Guide to Free Improvisation* (Corbett, 2016) to be an accessible introduction to the terrain from a committed follower's perspective. However, when talking about philosophies of improvisation we do not restrict ourselves to talking about musicians, using performers in other media, stand-up comedians and visual artists as examples alongside the musical improvisers. (see [Borgo 2007: 184-188] and [Johnston 2006: 93-164])

Smith's approach to teaching free improvisation, or rather creating the conditions where meaningful, freely improvised musical interactions happen, owes great debt to working with Keith Tippett whilst studying as a Masters student at the Royal Welsh College of Music and Drama from 2003 to 2005. Tippett would teach a class of around 20-30 students, selecting small groups who would play together with no instructions other than to listen to one another and to respect the contribution of all co-performers. Listeners were also required to talk about what they heard during a performance in a constructively critical manner; i.e. no unqualified positive or negative comments; no comments without detailed discussion of what a student heard or saw during an improvisation. Thus, the sessions necessitated active listening whether one was performing or not. As students we were very much placing ourselves in the position

of engaged contributors, whether playing or not, and rehearsing the process of improvising even when we were not called to do so. Everyone usually got to play at least twice (Smith 2007).

Our approach in class has been to keep Tippett's broad outline but to gradually increase the group sizes one at a time from duets and finally to hand over the selection of groups to the class to choose instruments and players as an act of musical organisation. We were trying to show that musical organisation, or composition, is not incompatible with improvisation and that the two can exist in parallel with one another. Explanation of, or investigation of, musical thinking and decision making here was made to inform both compositional and improvisational strategies, even though the musical discourses under discussion were all improvised.

Applied improvisation with the assistance of Undergraduates

Our approach to creating conditions and environments that are conducive to musical experimentation extended beyond the classroom and into the community. Working with community groups, mainstream and special educational needs schools, and a host of local venues we were able to develop performative platforms and workshops as collaborative ventures with our final year students. For some of our students, being able to recognise a 'need' for improvisation and the participation and social inclusion that it can offer has proved significant. Where there have perhaps been challenges in registering the value of the improvised performance, being able to witness and contribute to a workshop that enabled participation in a visibly meaningful way could often remove those barriers and inhibitions. Our work was often research-led, taking experimental technologies and techniques into community setting to explore and gather data on their relative successes and failings. Where these led to conference presentations and journal articles, we were then able to link these published findings

with the experiences our students were actively engaging with. Many of our graduates took their improvisation skills directly into connected areas as community musicians, music therapists and educators and have been able to also take with them their knowledge and experience of working within this context of applied research.

Taking students into community settings would generally involve working with novel or assistive technologies and part of our approach as research-informed educators and practitioners has been to consider frameworks by which music technologies can be understood in terms of different performance opportunities they offer. Having students who are informed in this way has enabled them to appraise new devices and instruments as tools for realising their own improvised ideas but also for enabling the interaction and participation of others.

Improvisation as a method of testing new software and hardware instruments in live performance

To better understand the impact of assistive technologies on expression and ownership within music improvisation, we have drawn upon Malloch et al's (2007) framework for analysing digital musical instruments (DMIs). Of particular interest here is the notion of a continuum of Performance Behaviours (PBs) on which any DMI can be placed in terms of the relationships that exist between performer and instrument/controller. At a *Skill Based* level, the performer is in direct control of the timing and sonic qualities of each sound being performed. *Skill Based* behaviour is therefore similar to performing with a traditional instrument. *Rule Based* behaviours suggest that some aspect of the performance is being handed over to the system; the performer is receiving greater sonic output than she or he appears to be controlling by way of input. An example here would be a DMI that offers arpeggiation for example. At the other extreme of the continuum are *Model Based* behaviours which are essentially

‘pieces’, or complete musical building-blocks and sequences where potentially the only interaction being offered is the starting and stopping of an entire phrase, section or piece. The closer a DMI is to offering *Model Based* behaviours, the more likely it is that a considerable amount of ownership has been relinquished to the system. The result can be a subtle shift in control and ownership which is still subjective to the individual in terms of meaningfulness of experience. For example, one performer may be quite content to have a performance artificially tidied-up to appear more coherent or ‘polished’ whereas another performer may regard this as wholly undesirable, valuing the sense ownership far higher than the overall musical ‘quality’ of their performance. Having a sense of this relationship can help the workshop coordinator choose appropriate assistive technologies for individuals to work with based on individual needs and values.

Though originally suggested as a one-dimensional continuum by Malloch et al, we now recognise the need for a two-dimensional space for Performance Behaviours (see Challis 2017) as there are numerous technologies that blur between all three modes allowing the performer to fluidly move between skill, rule and model (e.g. Tenori-on, Kaossilator or Push). When trialling new designs and systems to improvise with we have considered where each might sit within our extended model for Performance Behaviours. Where we observe Performance Behaviours that may be enabling for individuals with specific challenges we would subsequently hope to still observe these same benefits when trialled within a community setting.

This research and practice has since progressed to explore methods for applying assistive technologies and improvised music as a means for enhancing multisensory environments. This has included repurposing the techniques and technologies of adaptive game-audio to enable active-interaction in sound environments that have

previously been passive. Gaming devices can often offer low cost access to sophisticated sensors and interaction technologies that would perhaps be beyond the reach of equipment budgets for many small scale research projects. The Kinect from Microsoft has been a much exploited example here, offering free-field mapping of hand and limb movement to trigger sounds and music. More recently, a desktop equivalent (The Leap Motion) has become available offering a way to map musical outputs on to smaller gestures by finger and hand. There are many other devices to consider (e.g. head tracking and force-feedback joysticks) but the methods by which sound and music are created and controlled within games environments can be just as enabling. Often referred to as 'adaptive' music, the score is designed to follow a variety of non-linear narrative outcomes depending on where game play takes the player. These compositional approaches will often use a minimal number of parameters to control the high-level flow of music, structurally and emotionally. This has proven to be a useful construct in our contexts, offering a means by which someone can improvise within seemingly complicated textures by manipulating perhaps only one or two parameters that are mapped out across, for example, simple linear hand motion within a Leap Motion sensor.

Creating original scores for films, mobile game applications and dance show performances and videos

We have used improvisation, subsequently edited in the studio, as a strategy for creating pieces in collaborations with artists in other media forms. One example of this

was when we created the soundtrack for the game ‘Attack Kumquat’ in 2008-9⁴. For this we synced up two Nintendo DS consoles running Korg’s DS10 synthesiser-sequencer whereby two players or performers could improvise in sync; a method we had previously explored within our accessible improvised music workshops. After creating a considerable amount of material that was rhythmic we improvised over these backings with keyboards (Challis) and saxes (Smith) and edited the results into a theme and in-play music for the game app on a mobile phone platform and subsequently released on 7” vinyl⁵.

An example with more longevity is our collaboration with choreographer and performer Sean Tuan John. Sean asked us to create a score for his film *Antediluvian* (2010) and in response we trawled through our recordings of our live improvisation performances for suitable material which we edited to picture to create the soundtrack. Broadly speaking, we developed a way of working with Sean and his dancers where we improvised together until we found a musical and movement ‘groove’ that worked together (music and dance) and suited the scene we were creating. We would then further improvise around this now fixed pattern of movement and music whilst recording the music. Subsequently extra musical layers were often added to these raw improvisations. These were then edited to suit the needs of the show’s narrative. But the process was to:

- (1) Improvise until a mutually productive groove was discovered.

⁴ Attack Kumquat was a mobile puzzle app by Little Old Lady Games who subsequently became Wales Interactive, a Welsh Government backed games company who kickstarted and still lead the Welsh gaming industry.

⁵ <https://soundcloud.com/rob-smith-cardiff/attack-kumquat-remix>

- (2) 'Fix this' groove or rhythmic pattern and improvise over it whilst recording it.
- (3) Add more musical layers and edit in the studio (not in real time).
- (4) Test the result with dancers and hone until we were all satisfied it worked.

The strategy here is represented in a reductive way, and many times the actual process was more complicated with stages having to be repeated when things did not quite work, but many times it was as simple as the above four steps. The advantage of working this way was that we improvised in situ with the dancers and so by the time we were honing the results we were fairly confident that we were on the right track in terms of suitability of the music to the dance sequences. From Sean's perspective the method was productive too:

'I think it is that concept of *play* as well, that it's a two-way thing... By the musicians being in the studio without, sometimes, already prepared scores, responding in the moment, that is where the real benefits come, aesthetically and artistically.' (Sean Tuan John in Smith and Challis, 2014, 209)

From the dancers the response to the working process was equally positive:

'As a dancer, when Sean is setting a task, say, and we're creating movement, it's really nice to have you guys responding to the same task and to hear how you're interpreting it and then (...) seeing how I interpret it and that can inspire each other.' (Dancer Kim Noble in Smith and Challis, 2014, 208)

From this work emerge several interconnected concepts for the authors: the idea of *improvisation* as *play* with an idea given to us by the choreographer or by looking at a dancer's movement or phrase, or even a rhythm taken from a guide piece used in rehearsal which we then modify in our own way to create something new. It is easy to see a correlation between this kind of *playing* with music and dance ideas and the kind of *play* that happens when a new or unfamiliar musical instrument or system component

is in the hands of an improviser; the searching out of potentials, possibilities, the selection of useful or useable results and the incorporation of these into the improvised musical flow. This way of exploring improvisation in response to an environment is key: it can be co-improvisers, musical or other, it can be an acoustic, and audience or just an unfamiliar piece of musical hardware or software. It is the open-eared, improvisation approach that is the key discipline.

Conclusion

The skills we were using ourselves, and teaching to students are environmental listening (listening to everything around you), exploration of and response to that sonic environment and the tuning of the self as an agent of response and communication by allowing oneself to be in the moment the *improvised* moment. These are key life skills which, in a musical context, can be used to communicate with peers, explore and develop new instruments and seek out musicality in those less able to participate in music-making. The belief in improvisation as the right approach, either in and of itself, or as a stage towards something more *compositional* and fixed was our constant motivation in this work.

Our experiences through collaboration as improvisers, composers and educators has shown that whilst ‘teaching’ improvisation may appear to conflict with the very notion of improvisation, equipping students with the tools and environments (technological, physical and artistic) with which they can confidently explore, play and express themselves through improvised means does not. We have achieved this through several approaches: creating environments for improvised musical play that are supportive and non-judgmental, developing and sharing models for improvising the raw materials for larger composed works and by establishing models for analysing and appreciating the performative opportunities that reside within different technologies.

Often the most rewarding experiences through musical improvisation for our students has been in *applied* musical contexts where improvisation is a strategy towards inclusion and engagement.

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