Title: Sound Waves- Learning from Mistake and Repair in Improvisation

Keywords:

Improvisation, mistakes, learning, activity theory

Author details

N.Beech, G. Greig, H. Patrick, and

School of Management,

University of St Andrews,

Gateway Building

North Haugh

St Andrews

KY16 9ST

UK

Tel: 01334-467300

Fax: 01334-462812

Email:

 pnhb@st-andrews.ac.uk

gjg@st-andrews.ac.uk

hjep@st-andrews.ac.uk

D. Sims

Cass Business School

City University

106 Bunhill Row

London

EC1Y 8TZ

UK

d.sims@city.ac.uk

Abstract:

Improvisation is a practice linking performance with learning in the moment. Connections between performance and learning are extensive, demanding technical knowledge and practice over a prolonged period of time. Equally, performing improvisation involves immediate demands as the improviser reacts to her/his performance and the context. This study features an autoethnography of musical improvisation. The grounded analysis highlights the importance of mistakes and repair as possible sources of new practice. The paper contributes by offering an alternative view of improvisation as a contested rather than fluid practice which may or may not be a source of learning.

Corresponding author: Dr G. Greig, gjg@st-andrews.ac.uk.

Tel: 01334-462875 Fax 01334-462812.

Sound Waves:

Learning from Mistake and Repair in Improvisation

Introduction

Improvisation has been identified as an intrinsic part of many work practices, including managing and organising (Miner, Bassoff and Moorman, 2001). It has been recognised as something that expert practitioners must be able to do. From a practice perspective, improvisation links performance with learning in the moment, whilst simultaneously drawing upon longitudinal learning of theory and technique. The waves of connection between performance and learning are extensive in that learning to improvise demands technical knowledge and practice over a prolonged period of time (Cunha et al, 1999). Equally, when performing an improvisation there are intensive and immediate waves as the improviser reacts to her/his performance and the context. This form of practice has been characterised as "embodied practical mastery that emphasises open-endedness, differentiation, and innovation in addition to the mastery of a specific set of normative embodied dispositions" (Wilf, 2010: 564).

Whilst improvisation has attracted considerable attention in organisational literature, it has usually been treated as a metaphor, based largely on jazz music (Zack, 2000). This has generated a prevalent view that improvisation is a free and fluid, unified and harmonious aspect of working practice, centred on agreed or mutual aims (Hatch, 1999; Crossan et. al., 2005). Vendelø (2009) has criticised the literature for failing to open the Skinnerian "black box" to explore the actual practice of improvisation as it happens. In this paper, our purpose is to explore the process of learning through participation in improvisatory practice, to identify implications for learning from improvisation more generally. In order to do this we draw upon activity theory to explore the learning process in improvisatory practice, moving away from studies of jazz groups playing together. Our contribution is based on a co-produced autoethnography of musical improvisation in organ playing, within the work setting of church services.

We contribute to the extant literature in two ways. First, through analysis of participation in improvisation, we demonstrate that improvisation is actually a complex practice within another practice, characterised by contested views and multiple perspectives. This counters the prevalent conceptualisation in the literature that improvisation is a harmonious and intuitive process. Second, we challenge the "anything goes" view of improvisation and argue that it is possible to make mistakes of various kinds, and suggest that these can be a source of learning in certain conditions. Hence we argue against the extant perspective that improvising and learning from improvising are intuitive, fluid, harmonious processes that occur in a "natural" way; we propose an alternative view that the practice of improvisation - and learning from it - entail contestation, mistake making and reflection.

Improvisation in Organisation and Management Literature

Over the past decade a growing literature has sought to address the question 'what can management learn from improvisation?' Much of this research has focused on jazz music in which improvisation is a well developed practice and highly valued. Hence, jazz provides an extensive source of data. Certain aspects of jazz improvisation have been highlighted including

the freedom from written notation, the spontaneity of the creative process and the relative lack of structure which enables performers to 'compose in the moment' (Weick, 1998).

A number of lessons for management practice have been derived. Although these are wide-ranging, it is possible to cluster them into four groups. First, there has been a focus on innovation in 'real time' through improvisation. For example, Orlikowski (1996) discusses customer-support staff improvising around slippages made while adapting to new technology with the result that new operating practices gradually develop. Secondly, conclusions have been drawn about the fluidity of managerial problem solving in changing environments (Brown & Eisenhardt, 1998) as managers 'continuously and creatively adjusting to change' and maintain/enhance production (Eisenhardt & Shull, 2001). Thirdly, alternative approaches to leadership and teamworking have been proposed (Barrett, 1998; Montuori, 2003) which stress creativity, community and co-operation (Kamoche et. al., 2003). Improvisatory practices and spontaneity are seen as increasing cohesiveness and improving relations in teams (Vera and Crossan, 2005). Lastly, improvisation is regarded as a significant contributor to organisational learning through the mobilisation of tacit knowledge and compatibility with emergent strategies (Bergh & Lim, 2008).

It is clear that the development of this line of research has contributed to our understanding of the fluidity and unplanned nature of much managerial practice. This paper aims to provide a development of current understanding by drawing upon a complementary set of ideas and empirical material. A rich tradition of improvisation exists in many musical genres and some cultures have developed entirely unwritten and largely extemporised forms of music making as their norm (Nettl, 1974). Our focus is on organ music where improvisation has played a very significant role in styles from baroque to romantic (Pressing, 1987). The empirical material that informs this paper also differs from much of the current literature which is based on listening to improvisations (live or, more commonly, recorded). There are a small number of exceptions such as Barrett (1998a) and Montuori (2003) who are musicians and our material, like theirs, is drawn from an auto-ethnographic approach.

We would prefer to introduce a third way of conceptualising improvisation as a practice in itself, related to other practices (such as organ playing or working as a jazz musician, or any other form of work practice). On this view of improvisation, there are elements of pre-prepared and responsive/reactive practice, but these aspects are shown to be dynamic and co-present in the moment of improvising.

We draw upon activity theory to analyse our empirical material (Engestrom et al, 1999). Activity theory is a practice-based theory within which practices are understood to be patterns of significant behaviour linked in activity systems (Gherardi, 2009a). These reflect the mediated, social, cultural and historical activities through which meanings become attributed to practice within particular settings and at particular times through contested understandings yet mutual aims (Blackler and Reagan, 2009). Blackler and colleagues (2000) operationalise a framework which we have found to be very helpful. They pose a series of usefully direct questions of which three are adapted for use here. They are: What are people doing? Who are the actors? How are they doing what they are doing? In this paper, we focus on the first and last of these three questions to explore the process of improvisation and learning from it.

The question of what people are doing is not only focused on behaviour but on the meanings and patterns of activities as they form over time. The focus is on an 'object of activity' which is "a thing or project that people are working on to transform" (Blackler and Reagan, 2009: 164) such as providing social services for children or healthcare services. Objects of activity are simultaneously given (the patient's embodied healthcare needs), constructed (meanings are associated with the patient's needs), contested (there are different understandings of the mutual aim of meeting healthcare needs) and emergent (the patient's needs change over time and with treatment/interventions). Tensions and dilemmas are intrinsic to activities and they are understood to sources of learning (Engestrom, 1987), with current practices reflecting ways of dealing with previous dilemmas (Blackler and Reagan, 2009).

The third question is 'how are the practitioners doing what they are doing?' The aim under this heading is to uncover the crucial mediating role of tools in improvising, and the impact of context on this practice. This reflects the importance of the materiality and aesthetics of practice, which is critical to understanding the process of improvising. The materiality of improvisatory practice is important in analysing the role of mistakes and associated repair work. Activities feature sets of rules which can relate to value, aesthetics (Strati, 1999; Gherardi, 2009b) and the expectations and norms of the genre. These contextual rules provide a basis for the practising community to be able to judge a skilled/knowledgeable/valuable performance (Nicolini et. al., 2003).

Live music performance is a growing aspect of musical work (Frith, et al, 2009). Playing in churches forms a significant part of the employment of musicians: in the US, religious organizations were the second largest employer of musicians (Bureau of Labor Statistics 2009) and church organists represent a considerable proportion of employed musicians in the UK and US (Florida, et. al., 2009). Within the setting of many church services improvisation occurs mainly while others are waiting (for example, improvising a prelude before a service) and while others are acting and need musical accompaniment as a 'bridge'(for example, when a bridal party is moving from one place to another). Jazz studies have concluded that improvisation entails team-work, fluid co-ordination and collaboration amongst players with a common purpose. Our focus on organ playing allows us to ask what happens when improvisations are performed in a setting featuring a mutual object of activity but where participants have different roles to play in achieving their purpose, in addition to potentially differing views about the object of activity (Blackler, et. al., 2000).

Therefore, we apply the first and last of the practice-based activity theory questions posed by Blackler et al (2000) to examples of organ improvisation in order to uncover findings which reveal insights into learning through participating in the practice of improvisation.

Method

In order to gain insights into the practice of improvisation, we needed to draw on data from both "inside" and "outside" this practice (Gherardi, 2009a). This was important in order to identify when improvisation was happening, what was being done during that time, and how and why particular courses of action were chosen over others in the moment. Therefore, the method we chose was co-produced autoethnography (Hayano, 1979; Kempster and Stewart, 2010).

Sometimes described as "performance ethnography" (Denzin, 2003, p.245), it is an approach which has proved helpful in musical research, enabling the researcher as participant to look both

inward and outward in relation to personal performance in the moment and in particular situations (Bartleet, 2009). Intensive reflexivity and the process of writing is used to produce data which captures as much of the experience of performing as possible in the form of researchers' own stories about their own practice (Holman Jones, 2005; Richardson and St Pierre, 2005; Boje and Tyler, 2008).

However, intensive reflexivity can engender inward-looking insights which can be difficult for those outwith the practice to understand or appreciate, as frequently noted in the jazz improvisation literature (for example, see Becker, 1963). Therefore in order to enhance the outward focus on the nature of improvisational practice, additional work was undertaken through in-depth interviewing (Adler and Adler, 2008). This process resulted in the co-produced autoethnographic data upon which our theoretical insights are based.

Two of the research team performed improvisations on a regular basis at church services over an eighteen month period. During this time, approximately 100 instances of improvisation were noted, lasting between 5-10 minutes. After initial analysis, team members recorded a further 25 improvisations for further analysis. Field notes were kept along with the recordings of improvisations and the two performing research team members used these data to produce accounts of their improvisatory practices. The co-production of data involved the other two members of the research team reading through these accounts and interviewing the two performing research team members. This helped with developing reflexivity in the autoethnographic stories of experience during iterative phases of analysis, data gathering and theorising. Hence, in Nicolini's (2009) terms we were able to both 'zoom in' on the direct experience (Shotter, 2006) of improvisation and 'zoom out' to discern patterns.

We now draw upon stories of improvisation from our data which demonstrate what participants "inside" the activity were doing. After this we will present data from group discussions of these stories about why and how they were doing this, in order acquire a view from "outside" the practice. Through analysis of these combined data we address our theoretical questions about the process of improvisation and how learning may happen through participation in improvisatory practice.

Stories of improvising – "inside" the practice

Story 1: A cold Sunday morning (Researcher 1)

It is a cold Sunday morning in October, and it is the dedication festival of the Church in which I play. I have played the main piece I wanted to play before the service, a chorale prelude which did various interesting things with the tune of 'Jesu, joy of man's desiring', which is going to be the anthem later ... But it is cold, and I have already had to improvise a couple of bars in my prepared piece because I lost the place. I was quite cross with myself about this ('wake up') but the repair went well, and only someone who knows the works of Percy Whitlock will have known that this one was two bars longer than it ought to have been.

Now it is time to improvise until the priest is due to start the service, and I want to introduce the congregation to the tune of the first hymn they are going to sing. I do not want to play it, which would be naff, but to suggest or imply it, so that it starts to resonate in the minds of the listeners.

Organ keys are quite good conductors of heat, so the whole hand cools down rapidly on a cold morning, and on the way between two intended notes I hit a completely wrong note both in terms of the key I am playing in and in terms of the rhythm in which I am playing. There is nothing for it; this unintended figure will have to become a repeated ornament, so that it sounds intended. So I pause the development of what I am playing, putting the equivalent of a comma into the flow, and repeat the unintended passage, and do so again, in the hope that by now it is beginning to sound like a deliberate, if slightly quirky, piece of melodic invention. The repair feels comfortable.

The music flows again, but is beginning to sound too smooth to me and I now want to introduce something a little more pungent. I draw a clarinet stop on one of the manuals, and take my right hand there to continue the stream of melody, still reminiscent of, but different from, the first hymn tune. There is a sudden gap – whoops – the D below middle C is at best intermittent on that manual, and today is one of the days when it is absent. [It is not uncommon on pipe organs of a particular vintage to have some notes that fail to play because of deterioration in the system that transmits air from the bellows to pipes.] So there is a tune with a missing note. I knew perfectly well that I could not rely on that note working – how stupid can you get? But perhaps if I carry on and occasionally lead up to a particular note, but then not play it, again I can give the impression that this is all part of what I want to do – to enliven the performance by leading clearly to a note which is then left implicit and not actually sounded. Like Haydn. So that is what I did over the next minute or so until I saw that it is time to give the priest the nod to tell her that it is time to begin the service, at which point I ended my playing with one more missing note, supplied two beats later than people were expecting it, to show that it was all intended!

Story two : A wedding (Researcher 2)

Weddings often have long 'gaps' while waiting for key participants to be ready, or for large numbers of people to enter or leave. I had decided to use the tune of Brother James's Air as a basis for the improvisation and had played it through a few times at home. I started with the theme and improvised chords to accompany it. I played softly and the chord structures were complex and somewhat jazzy as I gradually moved away from the melody and concentrated just on the chord progression. Eventually I worked back to the basic structure of the Air and reintroduced the melody using a different pipe setting (hence a different sound). After playing the melody I wanted to introduce some variation and so I modulated into the relative minor key. This sounded quite different, but I then realised that I had slipped back into the major key without meaning to. I played around modulating between various keys and no themes from the Air were present in the playing at this point. The congregation were quite noisy and there was no sign of activity from the vestry so I decided to do something different again. This time I thought of playing the piece backwards. I had a fairly simple version of the music in front of me and I simply played it note for note in reverse. I had never done this before, but knew of a piece by Mozart which sounded the same played forwards or backwards. I knew this would not be the case with the Air, but wondered how it would sound and thought I could get away with it. I was rather surprised to find that it sounded nice. The melody was not very coherent, but neither was it incoherent. I was perhaps too pleased with myself and got lost, so I tried again by jumping back to the starting point (i.e. the end of the piece). However, as I reached the finishing point (i.e. the

beginning) of the piece there was no cadence (a musical structure that we naturally expect at the end of a piece) and so it sounded very odd. There was still no movement from the vestry, so I picked a bar at random, played it and then improvised freely, choosing another bar at random to connect to, followed by free improvisation in a repeating pattern. I finished with echoes between the swell and great organs (different sounds). As there was still no sign of any movement, but the congregation had gone quiet I selected a piece that I knew well to play.

Story three: A series of planxties (Researcher 2)

This is a series of four improvisations on a tune called Planxty Irwin, a traditional Scottish folk tune. The four improvisations were performed on consecutive weeks in normal Sunday services. For me there was a connection between the improvisations, but it is doubtful that anyone else was aware of this. In the first improvisation I played through the tune in a straight rendition. In subsequent performances I kept the structure of the piece but freely improvised a new melody. I ended by using a chord structure and arpeggios and little or no melody ... In the second improvisation I kept the melody but changed the whole feel of the piece by performing it in a march style. This made it sound very different to the original. However, I realised that it sounded a bit like William Lloyd-Webber, whose compositions I had been playing earlier. This made me want to change what I was doing as I thought it was too derivative. On the third week I was in a rush and had not managed to get the [organ] stop settings right. I started without being ready and almost took myself by surprise. I played quietly on the celeste pipe on the swell organ. I ended up playing something with the feel of a planxty, but with no other similarities to Planxty Irwin. On the fourth week I wanted to do something different, so I introduced some themes from another tune, Planxty Fanny Powers, which I had heard played with Planxty Irwin at a traditional music session. I did some interplay between the two planxties and introduced some arpeggio patterns (as in week One) but it got a bit messy and I finished it in a way that was not very successful.

Story four: Four normal services (Researcher 2)

This is another series of four improvisations played on consecutive weeks in normal Sunday morning services. These were intended to be free improvisations or, as they were recorded in field notes at the time, improvisations on 'nothing at all'.

The first one started with a figure played on the pedals. Having converted to the organ from the piano, the pedals are the least sure part of my playing, but I did this to be different and to deliberately move out of my normal, comfortable pattern of improvisation. By luck I noticed that I had a pedal pattern that could be repeated in the form of a trio and it went quite well.

The next improvisation started with the note D being played on swell, great and pedals. I have no idea why I just pressed the D notes. There was a textural difference between the sounds because of the stops chosen and as I noticed this it became an improvisation more about texture than tune. Shortly, however, I moved into a progressive scale-like pattern which is a normal form of improvisation for me (I now realise after listening to recordings).

The third improvisation was in the form of a march. This was completely unplanned. I produced a crescendo of reed stops and moved into a progressive scale pattern. I lost concentration and

wandered a bit. Then I refocused and modulated. This went OK and I modulated again. It was not going very well so I pulled it together and stopped.

In the fourth improvisation, I started without being ready. The Minister unexpectedly finished one set of activities and there was then a gap while people were moving. I pressed down a chord that contained several dissonances, planning to do so quietly and in a contemplative way. However, I had not remembered that I had the stops set to Tutti (all on) ready for the next planned piece. The result was a very loud and discordant sound which was quite shocking. I felt very embarrassed. I unintentionally verbalised 'urr' and felt more embarrassed. This was not helped by the fact that the organ position is in full view of the entire congregation. I quickly changed the setting and started to play something with what I thought had a Jean Langlais flavour. I am not sure why I did this, particularly as Langlais would be heard by many in the congregation as rather avant-guard. However, I played pedal chords and developed a 'question and answer' pattern between great and swell. I changed this to a question and answer between pedal and great (with swell coupled). Finally I built up to what was recorded in the field notes as 'a daft Langlais-type chord with very slowly resolving dissonances – quite funny'.

Story five: The long farewell (Researcher 1)

This story comes from the farewell service for a priest who was moving to a new parish. She had been a professional musician before ordination, and knew what she wanted from the musicians in the church. Just before a hymn she said 'Can you keep this one going – I want to get round and greet everyone individually, but I would really love to get back to the altar in time to sing the last verse'. So there was no possibility of thinking what needed doing, we were going to need an improvisation before the last verse which would last long enough to let her greet everyone – about 120 people, I guessed. Also, it was going to have to signal to the choir to stop singing but keep their books at the ready, and the improvisation was going to have to end with something that clearly told the whole congregation that it was now time for the last verse.

This was a requirement for which I had no preparation or experience. It was heightened by knowing that I had no way of estimating how long the improvisation would need to be, and that it would be judged by her family, who had come to see her in action, but whom I knew to love music almost as much as they hated religion.

As I was fully occupied in playing the hymn I was dependent on being completely in the moment when it came to my improvisation, on trusting my fingers to find notes, and on being confident that I would be able to build up a head of excitement during the improvisation that would lead to a pause in such a way that her dream of a wonderful last verse bringing her, the choir and the congregation together could be fulfilled.

I did not have enough warning of the event to record it, but it produced many questions afterwards about who wrote it, how did I know it was going to be the right length, did I realise that it went on for about five minutes, and when was I going to do it again?

Improvising, making mistakes and repair – "outside" perspectives on practice
In this section, we draw on data from discussions we had after researchers 1 and 2 (DS and NB) had an opportunity to reflect upon their improvising practice. In these discussions the other two

members of the research team (HP and GG) posed a series of questions to the researcher performers, which provided data from "outside" the practice of improvisation.

Story one begins with performing a prepared piece of improvisation whilst playing "Jesu, joy of man's desiring". Whilst doing this, researcher 1 makes a mistake which we revisit in our discussions about it. HP asks whether or not researcher 1, upon reflection, still feels he made a mistake and was cross or, since the repair went well, if he now views this mistake "as an opportunity to develop your practice, your improvising ability?" DS replies that this question hides an additional question about "what does 'went well' mean, and what kind of aesthetic is being used here." Reflecting on this episode, DS revisits what happens to him in instances like these during improvisation:

> "Okay what actually happens, I tend to lose concentration... it is a little bit like you are driving along the motorway and you don't recall passing the last few junctions. So you get into the same sort of unawareness really and it is almost a matter of will for me to keep concentrating, to keep reading the notes on the page and playing those notes - and every now and then I find that I have not."

Here the need to concentrate on what is written and/or prepared previously is highlighted and the mistake is of type M(2b) (see table 1 and diagram 1). This was a straight-forward error in improvisation and as such did not seem to have positive implications for future practice:

> DS: "I was cross with myself because I had not, it was like I had been sub-professional, so rather than actually read and interpret what was in front of me I had actually forgotten to do that and so I had cocked up and I did not think that was acceptable, but having cocked up I then wanted to – okay, so I did the repair. Did I learn anything from improvising from the repair? I don't think I did. It was a repair rather than some creative new piece of structure. So what I hope is that nobody noticed the difference."

Meanwhile, in story 4, an instance of intended improvisation provided another example of an improvisation going wrong in the view of research 2, but luckily seemed to go unnoticed amongst the congregation. When discussing instances of these problems the difficulty of getting muddled during improvisation was highlighted:

> NB: "sometimes you are playing and you suddenly think, what key am I in, I don't really want to be in this key, whatever it is… something that has happened to me a few times where I am fiddling around with stuff and I have kind of mucked around with some of the chords a bit to make them more interesting and suddenly realised … I have actually lost the plot in terms of being able to say what key am I in and what would be okay as a way of stopping in this."

Here, as with the previous example, the necessary repair work must be done, but the instinct of the performer is to get away from the problem:

> "I think my tendency is, under those circumstances, to try to stop it and do something else rather than doing an elaborate fix or repair."

We have identified these types of repair as "salvage" repairs (R(2b) – see table 1), through which the performer seeks to get things "back on track" by "improvising away from the error" (NB).

They are indicative of the pre-reflexive nature of practice (Gherardi, 2000). This seems to enable the improvisation in the moment, but can create problems in terms of drawing on embodied knowledge of practice to enable the necessary repair work when a mistake occurs:

> NB: "I think for me, that quite often happens because I have not been thinking about where my fingers are but have been listening to the sound and thinking, oh that is quite nice…and then at some point trying to, the composer bit of you comes out more, in which you are saying, well I need to do something deliberate now and then visually looking down at your fingers and thinking, oh dear, I did not want them to be there."

We noticed that the reluctance to engage in reflection about these examples to seek positive future improvisatory possibilities indicated the distaste researchers 1 and 2 felt towards these instances of their improvisatory practice (Gherardi, 2009b). This helped us to identify the importance of reflection on the improvisations to allow some "outside" view of the experience to form.

But there were times when mistakes were made but with positive outcomes. In story 1, as part of an intended improvisation the performer made a mistake resulting in an "unintended figure". This was a sound which the performer sought to portray as intentional by incorporating it into his improvisatory practice in order to cover this mistake (an M(2a) type mistake):

> DS: "I think the notion of repair is about, you take something and you mend it which means making the stuff round, make the thing look okay. … so I will hear what has come out and think, 'that was not actually what I was trying to say but now that I have done it I had better go with it', and build something up around that. I know I actually do the same thing when I am lecturing sometimes as well."

This type of repair work is an example of unanticipated improvisation within improvisatory practice, but which does appear to have the potential to become part of future improvisatory practice.

These examples highlighted the subtlety of unintended and intended improvisation to some extent, and related to questions about what they do whilst improvising in the activity of participating in church services. Performers did not always reflect on their improvisations for possible future use whether or not forced improvisations might actually have been better than what had been written on the score. Both DS and NB agreed there were times when this did, in fact, happen:

> DS: "there are times when you play stuff and you get it slightly wrong and you think, that is what they would have written had they thought about it."

Reflecting further on the aesthetics of musical composition, which perhaps underpins some judgments about whether or not a repair has "gone well" (and therefore has potential implications for future improvisation), DS and NB identified instances where they altered scores to make the music sound more 'fitting' or aesthetically pleasing:

> DS: "There is a whole lot of stuff, particularly from the 1990s, where I think there is a tendency to write quite bad endings to things, and so I think I will normally improve those in my own view."

10

This was also the case for NB, who identified times when he had amended scores because he realised this improved these pieces, so that from that time onwards, he played his improvised score, rather than the "official" one, which reflected "the Humphrey Littleton concept of improvisation" (NB).

This led to collective reflection on the relations between composition and performance, which is widely misunderstood by non-musicians, as exemplified by the myriad recordings of the "same" pieces in classical music, but which were interpreted differently in performance, yielding different musical sounds and experiences:

> DS: "…that example of … all those different recordings, why is there more than one recording of anything, given that most of them don't actually contain things which are identifiable as mistakes and the interpretation that has been done there."

These observations led us to explore some of the how and why of what these two performers were doing, whilst improvising. The importance of interpretation in producing new ways of performing music rather than error, in planned ways, demonstrated connections between performance and composition, as well as the important mediating effects of scores, timings set down by composers, and the material, embodied and distributed collective performances which produced such outcomes:

> "For example, …someone has actually followed the composer's metronome mark and [a review] will say how different it sounds when you follow the composer's metronome mark rather than the way everybody else plays it... I think that is a really interesting thing which might help people who are not familiar with some of the stuff to get the point about the soft boundary between composition and playing."

For these two performers, the needs of other people involved in their activity could produce the need to interpret the scores and improvise to change them in terms of timings. In story 2, the long wait for the service to continue stimulated various improvisations with varying degrees of success, in story 4, researcher 2 experienced a "salvage" situation following a mistake prompted in part by the minister finishing something more quickly than anticipated and a need to fill the gap in the service with music, and in story 5, the aleatory improvisation identified through the "insider" account was stimulated by the sudden necessity to improvise with advance notice at the request of the priest. During subsequent discussion we identified these instances as requiring either repairs or "bridging":

> NB: "basically, you fill in for them until the next bit of action. It tends to be called 'covering the action'."

> DS: "Yes, there is a recognised phrase for it in the organ community and there is even a book I have seen somewhere called "Covering the Action" about that."

Having identified different forms of improvisation and what this involved, and having realised through discussion that there were a range of mistakes and repairs that might be made, we noticed that a key aspect of improvisation in organ playing practice concerned the material mediating artefacts used in the activity of participating in a church service. In story one, the cold featured prominently. This emerged as an important aspect of how improvisation happened in that story and more generally in the embodied practice of improvising in organ playing:

DS: "it is to do with the hands and to do with how much choice of what you do with your hands and, for example, it is not unknown to keep going with the feet and one hand while you slip your other hand under your bottom for a bit to warm it up. This is part of my improvisatory practice."

This embodied aspect of practice was influenced by the organ being played, and as such, improvisation was mediated in terms of possible choices for playing and the types of mistake and associated repair which might feature. The cold made researcher 1 lose his place and make a mistake in story 1. But the cold temperature also affected his performance due to the nature of the instrument itself:

DS: "I know that I am likely to hit wrong notes because as your fingers do feel numb at the end of your hands and those keys, …with the sheer number of keys you have got because if it was just a piano keyboard it is not that many keys to bring up from the ambient temperature to your body temperature. When there is that number of different keys from manuals, they are all there to cool you down."

Different problems could be experienced in different situations, but these could be anticipated despite the difficulties they might create for playing:

NB: "There is another side to that as well, which is getting too hot. In the summer you can get too hot and if your hands start to sweat they slip off the keys.

The importance of context was highlighted in all of the stories, especially when the organs did not behave as they should, or where parts did not work. Sometimes this was due to player difficulties (the excellent example in story 4 of forgetting that all stops had been pulled out!) but sometimes these difficulties were for other reasons entirely. So what is possible in one circumstance would definitely not be possible in another, due to the instruments. Addressing problems may not be all that easy due to differing priorities in the overall activities. Researcher 2 describes such a situation:

NB: it is a horrible organ as well. …there is a diocese organ person who comes out and checks organs... He came and saw it and said, "yes, this is fantastic it should not be replaced. It is a historical item that is wonderful". But it is a nightmare to play because it just has one manual, it is a very small, kind of chamber organ. …… organic is nice and some of the sounds on it are nice but, there are various notes that are stuck, some of the stops simply don't work or only work in part of the keyboard, the power of it is limited and in fact depending on how much you play, the speed that you play and how many notes you have got pressed down, it can run out of wind so you end up having to play more slowly. Which is not good."

Given the different types of mistakes and repairs, and the influence of the mediating artefacts of activity, whether material or epistemic, which provide insights into what and how people do what they do, we wondered about why repairs sometimes became the focus of improvisation and sometimes they didn't. Researcher one suggested the following in his own experience:

DS: "it is almost like the difference between when you are driving and you start looking at the gear lever to think, did I really put it into that gear? Or alternatively start looking out the window and think, that is interesting. I have never noticed that there before. It is

like those two states of mind… when you distract yourself by paying unhelpful attention to some other physicalities, or alternatively you are enjoying the journey and you are lost - but you are still enjoying the journey. It is when you are in the frame of mind when you are enjoying the journey - I suspect it is more to do with that, than actually how bad was that mistake, that determines whether you go for repair or for recycling.

Discussion

We have identified two areas of activity of which improvisation is an aspect: organ playing/live music performance, and in the practice of improvisation itself, within the practice of live music performance. Analysing the mediating role of various material and epistemic artefacts (musical instruments, music scores, and previous musical knowledge which form the basis for the improvisations), together with the actions of others involved in the overall activity of the church service (minister or priest, congregation, the bride at a wedding) has enabled us to address Blackler et al's (2000) questions about what people are doing, and how and why they are doing it in certain ways.

In our study the materiality of organ playing and improvising within the overall activity of participating in church services was mediated first and foremost by the materiality of the organs themselves. Thus, significant abilities and constraints are imposed on the practice by the materiality of its medium, and the situations within which activity takes place. The musical scores and established expertise in routine forms of playing also mediated activity. Exploring our data through these major sources of mediation in improvisatory practice within the activity of participating in church services as live music performers, we have been able to identify a range of improvisatory practices, mistakes and repairs, and through these to identify the potential for learning through participation in these practices. These are set out in table 1.

PRACTICES	IMPROVISATION	MISTAKES	REPAIRS		New Improvisation Practice?
Practice A Organ playing	1a Unintended improvisation	1a Ordinary error in playing scored/practised piece on programme	1a unintentional improvisation to repair scored / practised piece on programme	R E F L E C T I O N	Maybe: might become a recognised future solution to such errors depending on how well it goes/is received
	1b unintended Improvisation	1b Forced error in playing scored / practised piece on programme due to mediating effects of other participants in overall activity or to material mediating artefacts related to embodied practice of playing the organ	1b Unintentional improvisation to repair scored/practised piece on programme to enable overall activity to continue or 'get back on track'	O F P R A C	Maybe: might become a recognised future solution to such errors depending on how well it goes/is received
Practice B Improvisation within organ playing	2a Intended improvisation	2a Mistake produced through materiality of embodied practice: use of mediating artefacts produces mistake in planned improvisation	2a Unintentional improvisation to repair intentional improvisation – new improvisation	T I O N E R &	Highly likely if feels right, sounds good, is well received
	2b Unintended improvisation in improvisatory practice	2b Ordinary error in intended improvisation	2b Unintended improvisation in unintended improvisation – salvage repair to 'get back on track' away from improvisation	O T H E R S	Unlikely – to be avoided: not aesthetically pleasing, difficult and undesirable to reproduce

Table 1 – improvisation, mistakes, repairs and learning

As the examples presented here illustrate, improvisation is not a free, fluid, unstructured set of actions as previously suggested (Barrett, 1998), but rather that improvisation has norms and rules in common with other forms of practice. Knowing the rules of musical performance, and knowing the instruments well, in addition to being aware of the other actions within the overall activity (in our examples, of the church services), were crucial to what were judged to be successful or "good" instances of improvisation. The contested view of the overall aim or purpose of the activity (participating in the church service) had real implications of the practice

of improvisation. The need to be able to participate in a way which fulfilled the needs of other participants in the activity but also to execute what would be considered a 'good' improvisation proved difficult to execute in the moment. This indicated the simultaneous need to perform in the moment whilst drawing on long established, well practised routines, demonstrating embodied musical knowledge and expertise. One performer observed that this was also the case in teaching which constituted another form of potentially improvisatory practice in which he participated, and as noted in the literature (Yanow and Tsoukas, 2009).

Despite such embodied knowledge acquired through participating in the practice of live musical performance and the practice of improvisation, it is possible to make a range of mistakes whilst practising improvisation in the moment. Therefore, the view that improvisation can be a source of innovation in 'real' time (Orlikowski, 1996) might be tempered by our finding that it is very difficult to be genuinely original when improvising. As illustrated in stories one, three and four particularly, we found that more patterns and routines were discernable than researchers 1 and 2 had realised previously. Conversely, composing at leisure rather than in-the-moment seemed to make it easier to be more innovative and creative by questioning and criticising patterns and trying out alternatives.

The mistakes we identified through these examples were related to the contested nature of the object of the overall activity and also to the materiality of practice within activity, most clearly seen through the use of mediating artefacts in that activity. The physical effects of a cold church, combined with the characteristics of the material mediating artefacts (especially the organ) influenced the practice of live music performance and of planned and unplanned improvisation. This allowed us to see that improvisation is frequently intentional (Blackler and Reagan, 2009; Wilf, 2010). Accepting that improvisation can be an intentional practice allows us to see that it is characterised by various forms of mistakes, and does not only happen as a result of mistakes in other day-to-day forms of practice (like live musical performance played according to the written score).

These mistakes and repairs within the different forms of improvisation may or may not lead to transformative or expansive learning (Engestrom, 1987), such that future practice may change. Based on our examples, we identified that mistakes produced through the materiality of embodied practice, illustrated by the use of mediating artefacts in activity, were most influential in generating creative mistakes in planned improvisation. These may have occurred through unintended improvisation whilst playing a prepared or programmed piece, or to give rise to or emerge from unintended improvisation in improvisatory practice, as demonstrated in Figure 1:

Figure 1 – Process linking improvisations, mistakes, repairs and learning:

Practice	Improvisation	Mistake	Repair	Learning?
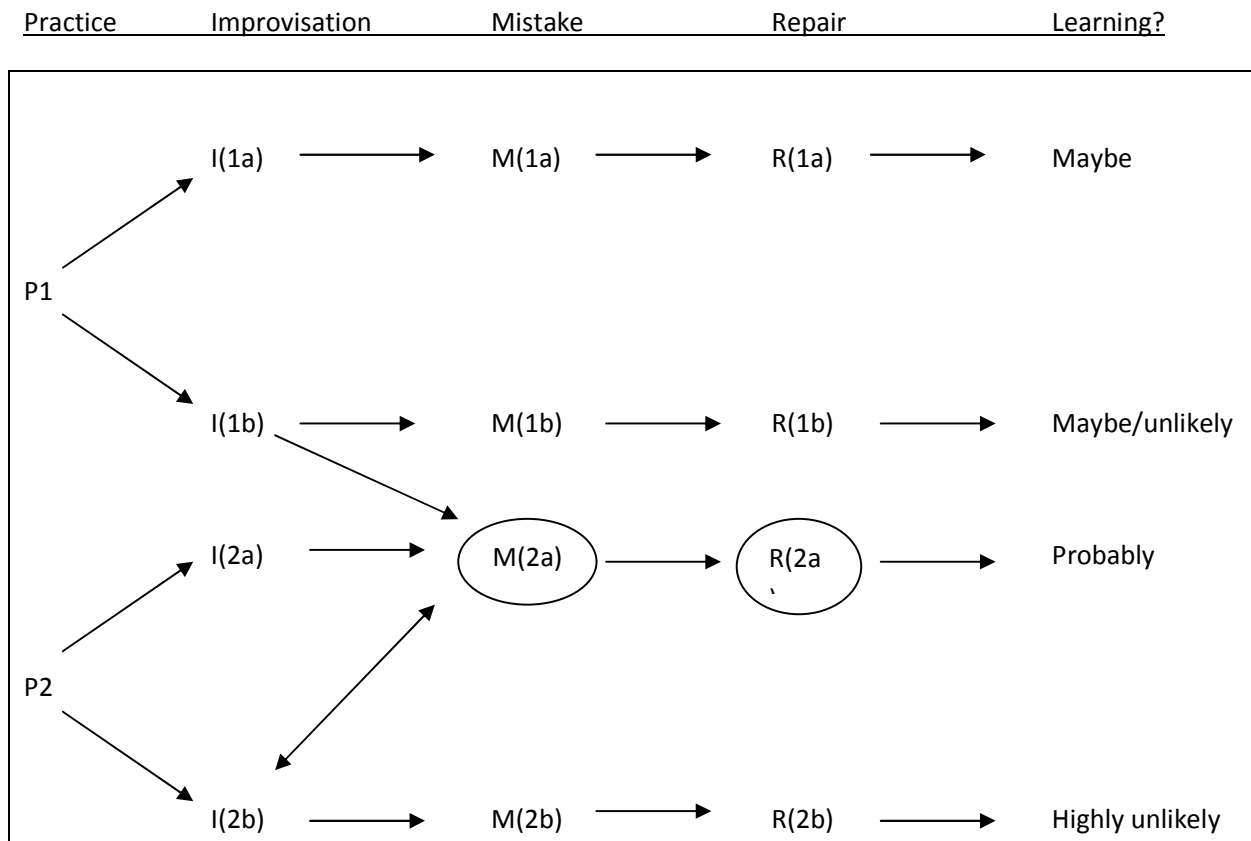
Conclusion

In this paper we have shown that improvisation is a practice which, when explored through the analytical lens of activity theory, is influenced by a range of material and epistemic mediating artefacts and by the sometimes conflicting needs of those involved in purposeful activity (in this case, participating in church services). By adopting a co-produced autoethnographic approach, we have been able to view improvisation from both "inside" and "outside" the practice (Gherardi 2009a).

These two views have yielded important insights into improvisation which demonstrate that it is an intrinsic aspect of everyday work in the practice of organ playing (Bailey, 1992). As such, we have shown that – contrary to the prevailing view of improvisation in much of the organisational and management literature – improvisation is not a harmonious, fluid and free way of practising (in this case, in musical playing). Rather, we suggest that it can be a contested aspect of activity which is partially constrained by the needs of others involved in activity. Improvisation involves preparation, technical and embodied practical knowledge of playing (Wilf, 2010). We found that producing truly new material is difficult, as the patterned playing identified through reflection on improvisation indicated. The critical importance of mediating means, both material and epistemic, and the situation within which activity occurs, were major influences on the nature of improvisation and its associated mistakes and repairs.

These findings enabled us to explore the possible implications of learning from improvisation more broadly. Having provided a different picture of improvisation from those based on jazz performing, we have identified a range of mistakes and associated repairs which may or may not provoke new forms of improvisatory practice. We noticed that reflecting on these mistakes and repairs, and how they were perceived by others within the overall activity, had some bearing on whether or not these ways of improvising became part of future practice. We suggest these findings provide new insights into the potential for learning through the range of mistakes in different forms of improvisation, and provide alternative ways of thinking to prevailing views of learning from improvisation in the organisational and management literature.

(7995 words)

References

Adler, P. A. and Adler, P. (2008) Of rhetoric and representation: the four faces of ethnography. *The Sociological Quarterly*, 49: 1-30.

Barrett, F.J. (1998a) Creativity and Improvisation in Jazz and Organizations: Implications for Organizational Learning. *Organization Science* 9(5): 605-622.

Barrett, F.J. (1998b) Managing and improvising: Lessons from jazz. Career Development International 3(7): 283-286.

Bartleet, B. (2009) Behind the baton: exploring autoethnographic writing in a musical context. *Journal of Contemporary Ethnography* 38: 713-733.

Becker, H. S. (1963) *Outsiders: Studies in the Sociology of Deviance*. New York, London: The Free Press.

Blackler, F., Crump, N., and McDonald, S. (2000) Organizing processes in complex activity networks. *Organization,* 7(2): 277–300.

Blackler, F. and Regan, S. (2009) Intentionality, agency, change: Practice theory and management. *Management Learning,* 40(2): 161-176.

Boje, D. and Tyler, J. A. (2008) Story and narrative noticing: workaholism autoethnographies. *Journal of Business Ethics*, 84:173–194.

Brown S. and Eisenhardt, K. (1998) *Competing on the Edge: strategy as structured chaos*. Boston: Harvard Business School Press.

Bureau Of Labor Statistics, 2009-last update, Occupational Employment Statistics [Homepage of United States Department of Labor], [Online]. Available: http://www.bls.gov/oes/current/oes272042.htm#ind [01/07, 2011].

Crossan, M.,Viera da Cunha, J., Pina e Cunha, M., and Vera, D. (2005). Time and Organizational Improvisation, *Academy of Management Review*, 30: 129-145.

Cunha, M. P., Cunha, J. V. and Kamoche, K. (1999) 'Organizational Improvisation: What, When, How and Why', *International Journal of Management Reviews* 1(3): 299–341.

Denzin, N. K. (2003) Reading and writing performance. *Qualitative Research*, 3: 243-268.

Engestrom, Y. (1987) Learning by expanding: An activity theoretical approach to developmental research. Helsinki: Orienta-Konsultit. [Internet]. Available from: http://communication.ucsd.edu/MCA/Paper/Engestrom/expanding/toc.htm? [Accessed 3 March 2007].

Engestrom, Y., Miettinen, R. and Punamaki, R.L. (1999b) *Perspectives on activity theory*. Cambridge: Cambridge University Press.

Florida, R., Mellander, C. & Stolarick, K. (2009) Music for the Masses: The Economic Geography of Music in the US 1970-2000. www.creativeclass.com

Frith, S., Cloonan, M. & Williamson, J. (2009) On Music as a Creative Industry in Pratt, A. & Jeffcutt, P. (eds) *Creativity, Innovation and the Cultural Economy*. London: Routledge.

Gherardi, S. (2009a) The critical power of the 'practice lens'. *Management Learning*, 40(2): 115–128.

Gherardi, (2009b) Practice? It's a matter of taste! *Management Learning,* 40(5): 535–550.

Hatch, M.J. (1999) Exploring the Empty Spaces of Organizing: How improvisational jazz helps redescribe organizational structure. *Organization Studies*, 20: 75-100.

Hayano, D. M. (1979) Auto-Ethnography: Paradigms, Problems, and Prospects. *Human Organization,* 38: 99-104.

Holman Jones, S. (2005) Autoethnography: making the personal political. In Denzin, N. K. and Lincoln, Y. S. (Eds) *The Sage Handbook of Qualitative Research 3rd, Edition*. 763-791, Thousand Oaks, London, New Dehli: Sage Publications.

Kamoche, K., e Cunha, M.P. and de Cunha, J.V. (2003) Towards and Theory of Organizational Improvisation: Looking beyond the jazz metaphor. *Journal of Management Studies* 40: 2023-2051.

Kempster, S. and Stewart, J. (2010) Becoming a leader: a co-produced autoethnographic exploration of situated learning or leadership practice. *Management Learning*, 41: 205-219.

Miner, A.S., Bassoff, P., Moorman, C. (2001) Organizational Improvisation and Learning: A Field Study. *Administrative Science Quarterly*, 46: 304-337

Montuori, A. (2003) The Complexity of Improvisation and the Improvisation of Complexity. *Human Relations*, 56: 237-255.

Nettl, B. (1974) Thoughts on Improvisation: A comparative approach. *The Musical Quarterly* LX(1): 1-19.

Nicolini, D. (2009) Zooming In and Out: Studying Practices by Switching Theoretical Lenses and Trailing Connections. *Organization Studies*, 30: 1391–1418.

Nicolini, D., Gherardi, S. and Yanow, D. (2003a) Introduction: Toward a practice-based view of knowing and learning in organizations In: Nicolini, D., Gherardi, S. and Yanow, D. (Eds.) *Knowing in organizations: A practice-based approach*. New York, London: M. E. Sharpe.

Orlikowski, W. A. (1996) 'Improvising Organizational Transformation over Time: A Situated Change Perspective', *Information Systems Research* 7(1): 63–92.

Pressing, J. (1987) Improvisation: methods and models in Sloboda, J. (ed) *Generative Processes in Music*. Oxford: Oxford University Press.

Richardson, L. and St Pierre, E. A. (2005) Writing: A Method of Inquiry. In Denzin, N. K. and Lincoln, Y. S. (Eds) *The Sage Handbook of Qualitative Research 3rd, Edition*. 959-978, Thousand Oaks, London, New Dehli: Sage Publications.

Shotter, J. (2006) Understanding Process From Within: An Argument for 'Withness'-Thinking. *Organization Studies*, 27: 585-604.

Strati, A. (1999) *Organization and Aesthetics*. London: Sage Publications Ltd

Vendelø, M. T. (2009) Improvisation and learning in organizations – an opportunity for future empirical research. *Management Learning* 40: 449-456

Vera, D. and Crossan, M. (2005) Improvisation and Innovative Performance in Teams, *Organization Science*, 16: 203-224.

Weick, K.E. (1998) Improvisation as a Mindset for Organizational Analysis. *Organization Science* 9: 543-555.

Wilf, E. (2010) Swinging within the iron cage: Modernity, creativity, and embodied practice in American postsecondary jazz education. *American Ethnologist: Journal of the American Ethnological Society*, 37(3):563-582.

Yanow, D. and Tsoukas, H. (2009) What is reflection-in-action? A phenomenological account. Journal of Management Studies 46(8): 1339-1364.

Zack, M. (2000) Jazz improvisation and organizing: once more from the top. *Organization Science*, 11: 227-234