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Information Communication Technologies as a Tool for Re-imagining Music Education in the 21st Century

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Abstract

This article investigates a potential way ahead for music education in the 21st century. Drawing on material from the case study of a Manchester-based composer in northern England, it argues that those within formal education should examine more carefully the musical values and practices of artists and composers working with "technologically-enriched" contexts. It describes the need for the reconsideration of the role of technology in music education along with expanding the aims of music curricula and the possibilities for cross-disciplinary practice. Finally, the author urges all music educators to consider the wider artistic opportunities that new information communication technologies (ICT) can offer pupils.

Editors' Note: The author has supplied three musical tracks to accompany this article. These tracks in MP3 audio format can be downloaded by clicking on each link below:

- Track   2   (3.3 Megs; Download time = 10 mins. @ 56Kbps)
- Track 14   (8.2 Megs; Download time = 25 mins. @ 56Kbps)
- Track 17   (1.6 Megs; Download time = 5 mins. @ 56Kbps)

Introduction
Ears become wired
And minds become strong because
You're speaking the language
The language of music
The door is now open
To learn how to speak. (Young, 2003)

The last ten years have seen huge changes as educators seek to respond to the challenges of new technologies. Within music education there have been dramatic changes and it is now commonplace to find a range of technologies, both hardware and software, regularly used in music teaching throughout England (Mills & Murray, 2000) and the USA (Webster, 2002). As Cain points out:

These practical changes are very considerable, and, what is perhaps even more important, they have brought into question some of the most basic conceptual

frameworks that have underpinned music teaching. (Cain, 2004, p. 217)

Broad surveys of the use of technologies within music education, both in the United States and the United Kingdom, have much of value and give a helpful overview of the state of play in schools and colleges. But this article takes an alternative approach. It seeks to present a vision for music education drawing exclusively on the work of one professional artist, Alex (Note 1), from Manchester in northern England. Alex was selected from a number of composers interviewed as part of a wider piece of research investigating approaches to song writing (Savage, 2003). This article does not seek to make broad claims that can be generalised to all teachers and artists. Rather, it is an individual author's attempt to imagine what music education could, or should, look like if educators began to engage seriously with the issues associated with the use of new technologies in arts education. In Cain's (2004) terms: What questions do these new technologies pose of the "conceptual framework" that will underpin music education for the next century? (p. 217)

Alex is a professional composer-sound designer who runs his own commercial studio in south Manchester. He works for many major computer games manufacturers, national television, radio and other commercial clients from a range of industries throughout the world. Alex's studio is full of various pieces of technology, both old and new. It is centred on Macintosh computers running Logic Audio linked to a large mixing desk, numerous hardware and software synthesisers and samplers including two Nord Modular. Alex takes great pride in his sound library, a collection of over two terabytes of high quality digital audio sample materials that he utilises in his projects. Alex spends a considerable amount of time collecting these sounds. He uses a range of very expensive microphones to capture sounds from cars, tanks, planes, central heating pipes, pillows or whatever captures his sonic imagination. These sounds are edited and processed before being categorised in a complex storage system and digitally archived on external hard disks. Alex's working practices have been carefully documented in a recent resource designed to assist teachers in their teaching about film music (for further details please visit www.sound2picture.net). The process by which he conceives and produces a musical composition is a fascinating one, but beyond the scope of this article.

So what follows is a section from the final case study report written about Alex. It is written in a personal narrative and is accompanied by a selection of Alex's compositions drawn from a multimedia documentation of his working practice (Walker, 2002). It is hoped that through reading about Alex and listening to his music that readers will obtain a clear picture of his work and associated working practice. The wider significance of this for those involved in music education will then be considered in the following discussion.

Compositional Openings...

Alex's music has been a revelation to me. Dark, moody, highly expressive and emotionally charged, it has that indefinable quality that ensures it stands out and makes you listen. It is entrancing and alluring. It beckons you into new sonic landscapes where imagination and emotion can run free. Being invited into Alex's world has always been an education. I have looked forward to my visits to his studio, to hear about his current projects and to listen to his latest musical ideas.

I meet Alex for the first time in 2002. I visit him as part of my songwriting research project at his home in a deprived part of South Manchester near Old Trafford, the Manchester United football ground. As I arrive, I remember the words of Stuart Hall, long time radio football commentator—the "Theatre of Dreams" I think he once called it. Strong coffee in hand, Alex leads me down the narrow basement stairs to a large space, partitioned into three areas by bookcases and pieces of equipment.

One space is devoted to recordings, thousands upon thousands of CDs from music styles drawn from far and wide. Here Bach rubs shoulders with Cage, Rachmaninov with Eminen, obscure African songs with German lieder and everything in-between. I feel humbled by the breadth of his knowledge about his massive collection. He draws out CD after CD. "Have you heard of this?" he says, "Or this?" All too often the answer is no. Many of the artists and composers' names are unfamiliar and their music distant from my own listening. But I recognise the complete set of Sibelius symphonies.

The second space is full of books (and more CDs). Many are philosophical—discussing aspects of musical composition and technology, the kind you would expect to see in a university library. Contemporary fiction is here too, and books on other art forms such as film, video art and photography.

The final space is the heart of Alex's creative existence, his theatre of dreams. Cosseted under a small basement skylight, a dark and atmospheric space with a range of ambient lighting, is the recording studio where his dreams become reality. There is just space for the two of us, and his dog, to settle down. Computers, synthesisers, samplers, a large mixing desk and other pieces of technology old and new surround us. Many of these pieces of equipment are fairly common in other studios. But there is nothing common about Alex's music or the story of how he began to create it.

We start to talk. I suggest we go back to the beginning. I presume that his music education started early? What does he remember about music in his primary school?

> I played the xylophone – briefly. I remember the Headmaster having me in the school assembly playing "God Save the Queen". After that I just phased out—I was 9 years old. I didn't like the attention from people and I found it too much—the attention of all those faces watching me play that. Since then I've always been very opposed to performing in front of people. I rarely do gigs. (Alex, in interview, 2002)

Not the most positive of starts, I think. I move quickly on to high school. Who was his high school music teacher? What does he remember about him or her?

> (*11 seconds silence -*) I'm struggling . . . I remember my history teacher very well. I had a burning interest in history so I remember him very well. (*five seconds -*) Music—I mean—what they taught you was Baroque and Bach, Mozart and Beethoven and completely lost on kids. It's such a refined poetry that, you know, these composers who now I spend a lot of money collecting their stuff, is lost on kids.

In fact, it turns out that the whole school experience was not a positive one for Alex:

> I was excluded from school when I was 15 years old. I'm 29 now and have hindsight on my side. I see points that were causing the trouble. But I also think that there were some elements at school that perhaps did "fail" me. I think that one of the more important things that the teachers could have done was recognise my passionate nature and harness that, to bring out the best in me rather than put it to one side and be lazy and just exclude me.

But I am still intrigued to know what he makes of his own work. How does he define his unique studio practice? What does he think musical composition is about? What is his definition of a musician?

> There are hundreds of examples. But from someone whose has never been

taught where the C note is, for me composition starts with John Cage's *Silence* and ends with Rachmaninov. And in-between there's a small child who presses down a couple of notes on the keyboard or piano. They're a musician. … Of course their language is underdeveloped but they have that potential to go from that Cagian silence to Rachmaninov through practice and learning. There's no real defined point—you are a musician.

As our conversation draws to an end, Alex speaks in quasi-religious terms about the "saving power" of music in his life.

Music is—how can I describe it, it's so many things—it really has saved me from a life that. . .its hard to explain. I grew up on an estate in Edinburgh and I used to get in quite a lot of trouble. Music saved me from a path that I could see leading to destruction and for that I'm very grateful. So I tend to treat music as a very good friend. It's something that's helped me to communicate with people, to express myself. It's a language that you can relate to people from different nations. It transcends limitations. (Alex, in interview, 2002)

Discussion

Alex encapsulates the problem in formal music education today. He is unable to play a musical instrument in any traditional sense, entirely self-taught as a composer but successful commercially (writing music for television, film and other digital media), highly articulate in his views of others' music and consumed by a commitment and passion for his own. Yet here is someone for whom the world of formal music education at best was a total irrelevance (and at worst it failed him completely).

How can music education respond to the challenges of new technology that have empowered Alex to become a successful commercial composer yet without many of the so-called "traditional" skills that I, as a music educator, value and share with pupils through my teaching? Are other pupils who have less passion than Alex being isolated and cast aside through models of music education that are elitist and focussed around traditional (i.e. Western) definitions of instrumental performance, notation and composition?

Important steps have been taken to make the music curriculum more widely accessible to those pupils perhaps not seen as being "musical", especially in respect of its musical content. Green's work on the inclusion of popular musical styles (Green, 1988) has had a major impact in the United Kingdom and it is now standard practice to find a range of popular music in the curriculum. Similarly, world musical styles have found a place due to the work done by many ethnomusicologists working within education (Campbell, 2003; Kwami 1989, 1996). But these changes in curriculum content have not been matched by changes in pedagogy (Green, 2001, p.184). Green's recent work (2001) described what she defined as the *informal* learning styles of popular musicians. Her final chapter is titled "The formal and the informal: Mutual reciprocity or a contradiction in terms?" Within the chapter, she seeks to answer some key questions:

To what extent do the formal and informal spheres of music education and learning exist in isolation from and ignorance of each other? Do the two spheres involve approaches that are irreconcilable, or do they complement each other? If the latter, could they be developed in tandem, without riding roughshod over the nature of either, in ways that would benefit a larger proportion of children and young people? (Green, 2001, p.177)

My answers to these questions are: to a great extent they are isolated; no – they are not irreconcilable; and yes – they could be developed in tandem. So it is with these questions in

mind that I want to examine what Alex's story, drawn from the informal sphere, can teach those of us seeking to educate pupils within the formal sphere of music education. In reflecting on my meetings and interviews with Alex over the last two years, I would like to discuss three important applications for music education in the 21st century:

- The importance of new technologies in empowering and revolutionising musical practices;
- The need for curriculum aims and objectives to be reconsidered;
- The potential for cross-disciplinary arts education in the digital domain.

1. A Technological Revolution in Musical Practices

Firstly, I believe that Alex would not be the composer he is today without his wholehearted embracing of the technological revolution in musical production. By this I mean that his musical practices, as a performer and composer, are entirely dependent on his use of a range of music technologies. These technologies cover the analogue and digital range, and include the latest and most powerful personal computers as well as vintage monophonic synthesisers and other pre-MIDI devices. The range of technology is matched by his sophisticated and flexible working practices within the studio environment. Alex is not fixed in front of a computer screen. He is physically active within the studio, darting from place to place, animated and purposeful whilst tapping drum pads or setting patches, listening intently to mixes whilst experimenting in an improvisatory manner at his mixing desk. (*Link to soundfile here*). In interview, Alex expresses strongly the need for this kind of improvisatory play with technology:

> It is often the case that you'll get happy accidents. The way to get happy accidents is to throw things at each other and see if they work. And once you see that certain things do work you'll know that in the future you can have these two elements working together. Experiment, experiment, experiment and learn your craft. That's what it's all about. (Alex in interview, 2004)

Alex is not dictated to by the pieces of technology in his studio. Rather, he uses and abuses hardware and software for his creative ends. The context of ideas that he develops about a particular project and his broad aesthetic awareness are all driving forces in his musical expressions through the studio. In this sense, technologies have a formative part to play in musical composition, something that Pierre Schaeffer recognised many years ago:

> The creative power of the machine. … Machines suddenly are not content to retransmit what was given to them; they have begun—as if of their own accord—to make something. (Schaeffer, 1977, p. 168)

> These machines for feeling allow humans to see, to hear, to touch what his eyes could never have shown him, his ears could never have made him hear, to touch what his hands could never have let him touch. (Schaeffer, 1970, p. 92)

Alex's musical instruments are his pieces of technologies. He might not be able to play a keyboard or guitar but he can certainly play his Nord Modular (a modular synthesiser), mixing desk, TR707 drum machine and Logic Audio music software. And, just like a composer or arranger working within more traditional mediums, his choices of instrument are vital factors in the processes of musical creation. The characteristics of his instruments, whether they be electronically generated signals or audio samples, interact with a variety of musical and extra-musical factors to create his innovative music:

> In this sense, musical instruments are not 'completed' at the stage of design and manufacture, but, rather, they are 'made-over' by musicians in the process of

making music. (Théberge, 1997, p.160)

What would a similar embracing of technology mean for music education? It would not mean a complete scrapping of the content and pedagogy of the current music curriculum. As I have argued elsewhere (Savage, 2002), the concept of a discrete electronic or computer music is based on a modernist ideology that seeks to divide these musical styles from all previous or contemporaneous genres:

> Although there are certainly fundamental differences between electronic or digital technologies and acoustic instruments, such differences do not inevitably separate them from the broader continuum of musical expression; only the crudest technological determinism could support the argument that musicians approach these new technologies without bringing with them at least some of their own 'accumulated sensibilities' with regards to music making. (Théberge, 1997, p. 159)

> Therefore, we do not need to replace what are the many positive teaching strategies and excellent curriculum content that are already in place. Rather, we need to build and develop authentic models of ICT-mediated music education inspired by and through the work of ICT "experts" like Alex. Théberge's suggestion that a piece of technology is, in a sense, created or recreated by the user in the act of making music is relevant to us as teachers and our pupils as learners. We are all "consumers of technology" and our "ability to define, at least partially, the meaning and use of the technology is an essential assumption and theoretical point of departure" for any truly creative work. (Théberge, 1997, p.160)

Part of this wider definition of technological use is the context of teaching and pedagogy within which these technologies will be used. We should expect pupils to learn about music with technologies in ways that are different to our existing practices but we should not throw the baby out with the proverbial bath water. It is not that traditional musical concepts, forms and devices have had their day. Rather, it is a reprioritising and reordering of what is important at any one given moment in that particular educational context that matters.

In this technological-enhanced musical context, does it matter if a pupil cannot tell what the key signature of a piece of music they have created is, or whether or not a particular chord is in root position or first inversion? These are contentious issues upon which educators would have a range of opinions. The answer is that they may or may not matter, depending on the wider context of that pupil's work and the development of their creative ideas at that particular moment. It may be useful to them to consider aspects of tonality and harmonic function as ways of developing their work. Equally, they might be completely irrelevant and a meaningless distraction at that particular time.

But does this really address the heart of the issue? New technologies have allowed Alex to bypass some of these concerns and focus on more direct expressive issues of musical composition. But uncritical adoption of technology into the classroom will not facilitate the change that is needed and allow our pupils a similar experience. They will merely allow for the continuation of things as they are. There is a need to think more carefully about what we really believe a music curriculum should achieve.

2. Rethinking Aims and Objectives

Alex's experience of the formal music curriculum was completely alien to his natural musical abilities and inquisitive creative spirit. It failed to engage his emotion or mind and left him to develop his own informal learning environment. Many pupils with less passion

and commitment would have given up at this point and turned elsewhere. The aims of the music curriculum that Alex experienced at school divorced him from his innate abilities through poor teaching and insensitive comments at a crucial stage of personal development.

As educators, our beliefs, desires and aspirations about what is important in music education are key factors in determining how we seek to fulfil those aims. For example, introducing Year 7 pupils to sound processing technologies (Savage & Challis, 2001) was driven by my belief that a more deliberately hands-on, "sonic" approach to composition within small groups could be of tremendous educational value for all pupils.

The increased use of learning objectives or outcomes has dominated recent educational reforms. The clear definition by the teacher of what the pupils will learn, in advance of a lesson, is now seen as a vital, unquestionable and an integral part of their preparation. For teachers of the arts, this has always been problematic. At a basic level, prescribing the outcomes of an artistic activity takes away its sense of discovery and creation. Pupils, in my experience, quickly realise that their supposedly artistic activities follow a predetermined pathway and seek to conform appropriately. Alternatively, and in Eisner's words,

> In the arts and in subject matters where, for example, novel or creative
> responses are desired, the particular behaviours to be developed cannot easily
> be identified. Here curriculum and instruction should yield behaviours or
> products which are unpredictable. The end achieved ought to be something of a
> surprise to both teacher and pupil. (Eisner, 1985, p. 33)

One might ask how often we feel this element of surprise that Eisner suggests should be accompanying the processes and products of truly creative work in the classroom. In my observations of Alex's compositional processes, it is clear that his work with new technologies is not easily predictive or defined through simple learning statements. In many cases his musical compositions are nurtured and developed through a process of germinating and experimenting with ideas, trial and error, choosing from multiple compositional possibilities and pathways and constantly searching for appropriate, responsive structural devices. None of these are easy to prescribe in advance.

But Eisner's notion of expressive outcomes rather than expressive objectives seems eminently sensible and map out a potential way forward. Expressive outcomes are "the outcomes that students realise in the course of a curriculum activity, whether or not they are the particular outcomes sought" (Eisner, 2002, p. 161). At a basic level this type of objective relates neatly with Alex's conjecture to "experiment, experiment, experiment!"

A lot of things come down to experience really. For example, choosing two sounds to work together. Often the case is, you know, what will work together because you have a vast experience. *But if you are starting out the important thing is to experiment and see what happens when you put two sounds together*. (Alex in interview, 2004)

3. Cross-disciplinary practice in the digital arts

One of the main features of Alex's work is the interplay between the aural and visual domain, in particular that each can be used to reinforce the thinking, creative ideas, potential and understanding of the other. This was evidenced in the interview data where I was often struck by the strong visual metaphors he employed to describe his working practice:

> I feel that sound design is an area in which you can either paint with very large
> strokes or very fine strokes. You can go as deep as you like and put as much
> detail in as required. Or you can just paint with broad strokes. (Alex in
> interview, 2004)

Waters, in a helpful exploration and extension of this theme, identifies the crux of the problem when related to formal education:

> New technologies form a seductive meeting point for many previously separate arts practices. The generally uncritical acceptance of new tools, for example, the profusion of synthesisers in music classrooms, as a convenient means to the continuation of old concepts have tended to mask some of the more useful implications of the new technologies. (Waters, 1994, p. 28)

There is a need for us to facilitate a deeper cross-disciplinary interchange within the "seductive meeting point" of new technologies and use this to bridge the gap between what are often disparate artistic practices within our schools. Conceptually, this requires new and radical redefinitions of a subject's culture and working practices, as well as a consideration of how these may relate to other parts of the curriculum. Francis Dhomont, the French electroacoustic music composer, summed it up like this:

> We have more in common with the filmmaker or the sculptor, the painter, with the plastic artist, than with the traditional musician. I really have that feeling, even though my origins are in traditional music. (Dhomont, 2002)

New technologies radically transform "the arts" in ways that we are beginning to understand and apply within education. Recent research evidence from ImpaCT2 noted that it is a worthy goal to integrate ICT with subject learning (Department for Education and Skills, 2002, p. 3). But Alex's work as a sound designer offers an exploration of exciting new notions of artistic practice that integrate rich mixes of subject learning within ICT. This could help us lead music education towards a holistic model of artistic practice mediated through the effective use of ICT rather that traditional or pre-existing musical practice merely done with ICT.

The creative use of new technologies can resituate musical practices within the world of the digital arts (Sefton-Green, 1999). I am not suggesting that wholescale change is necessary here, rather an acknowledgement that a cross-disciplinary or multimedia approach to musical composition may well engage and motivate pupils more successfully, as well as facilitate the development of their broader creative skills. I have certainly found this to be the case in the three case studies contained within a new resource building on Alex's work, Sound2Picture, that have recently been completed in schools across the north west of England (see www.sound2picture.net).

Conclusion

In 2003 Dylan Mills, also known as Dizzee Rascal, was announced as the winner of the 2003 Mercury Music Prize. His album, *Boy in Da Corner*, was released earlier to rave reviews across the world. The album's title was autobiographical. It was about his expulsion from two high schools in East London. In his words, "I'd been that kid in the corner of the classroom, the street corner. I had my back against the wall in general" (Ojumu, 2003, p. 48). In a fascinating piece in *The Observer*, Mills discusses the influence of his music teacher, Tim Smith, and the music department on his work:

> There were good facilities in the music department, which is why I liked it and it was the only place in the school that I actually wanted to be. I was in the back room of the music department most of the time, working alone. I was focused and I didn't worry about what else was going on. I played music as I'd always imagined hearing it in my head.
>
> School would have been pretty dead really for me without music. Everything

> started there. I don't really class myself as a musician, I can make music but I'm not the greatest technically.
>
> I got on with Tim Smith from the start. He just let me get on with things. I'm never going to forget him. I'm not like that. (Ojumu, 2003, p.48)

And what does Tim Smith have to say about Dylan Mills and his work?

> I try to let students do what they want. I aim to create an atmosphere where they feel safe and can experiment. Dylan knew what he wanted to achieve and he worked quickly. His music had a clear structure and pattern, an amazing balance between rhythm, bass and melody.
>
> I'm fortunate to teach arts—you have a real opportunity to work closely with pupils. You can develop a one-to-one relationship that is quite unique. (Ojumu, 2003, p.48)

Dylan and Tim's story reflects what is really important in music education today. The effective use of technology depends on its application within the classroom, the surrounding educational ethos and, above all, the quality of the individual teacher and his or her relationships with the pupils. Tim Smith managed to provide the time and space for Dylan Mills to find his creative potential and express it through the medium of technology.

Alex has inspired me to consider the changes that new technologies can bring about in music education. His path towards the fulfilment of his dreams was hard. The "system" of school-based education put many obstacles in his way. Formality and orthodoxy were, at times, his invincible opponents. Yet his creative spirit won through. At 29, he believes in himself as a musician and is still moving onwards down his road of discovery.

Green's questions regarding the relationship between the "formal and informal spheres of music education" are relevant here (Green, 2001, p. 177). Embodied in the work of Alex, and demonstrated in the classroom context in the working relationship between Dylan and Tim, is an alternative vision of music education for the 21st century. At its heart is the use of newtechnologies to provide space and opportunity for the creation of authentic and novel artistic work, to assist in the transcending cultural values and to empower diversity of expression, to promote critical reflection and go beyond first ways of looking and thinking in the musical, visual and wider performance art domains.

Perhaps a music education that looks like this would have engaged and motivated Alex's creative spirit earlier in his life? His passion for music and his determination to be a composer was so strong that he has achieved many goals anyway. But how will we address the needs of those thousands of pupils in our schools with fewer opportunities, and less passion or commitment to succeed? Surely they have a right to a first class music education too?

> I treat music as a very good friend. It's something that's helped me to communicate with people, to express myself. It's a language that helps you relate to people. It transcends limitations. (Alex, during interview, 2003)

Notes

1.The composer's name has been changed at his request. He has read and given approval for this material to be used here.

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