Seeking Affordances: searching for new definitions and new understandings of children's relationships with technologies in musical compositions

ABSTRACT

Seeking understandings of the relationships children have with electronic environments is needed in order to continue to develop our understandings of what children are doing in those environments and why. This paper looks at the musical compositions of children in an electronic environment and attempts to demonstrate how those compositions are as much a product of the computer/child relationship as they are products of children's musical understandings. The paper also suggests the need for new definitions of children's musical compositions and new understandings of the affordances of the environment.

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BIOGRAPHY

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INTRODUCTION

The role of ICT in everything we do, in schools and out of them, cannot be underestimated. Despite the many offerings of ICT, we can still be led by traditional understandings and conventional definitions of text, language, communication, skill and musical composition. This paper presents the notion that if we search for new affordances we can create new definitions of those things afforded and new understandings of the ways in which children learn. From there we can begin to seek even more new affordances, or at least accept their existence, and begin to develop new understandings of the ways in which children learn. In particular, this paper seeks a new definition of children's musical composition; a definition that grows from our developing understandings of children and their relationships with new environments.

A project investigating the musical compositions of 10 – 12 year old children in advanced computer software environments led me to examine not only what it was that the children were composing, but what it was that the computer let them compose, and how the two were connected. The idea that these children's perceptions of what they were doing were led by their understandings of what music is and what they could do once they were allowed to explore the technology began to form. Recent work by Gall and Breeze (2005) argues that there is a need to reassess our understandings of children's compositional processes, especially in a computer environment. Gall and Breeze seek to explore composition through frameworks of multimodality and affordance. Their thrust is the impact that software packages have on the process of composition. I agree wholeheartedly with this notion but argue that in order to fully explore children's computer (in this case) compositions, not only must we acknowledge the place of multimodality and affordance, we must also acknowledge the computer itself, and everything that it brings to modern life. I wish to look beyond software applications (although these afford certain things to children and cannot be ignored) and into the idea of mindsets (Lankshear and Bigum, 1998; Lankshear and Knobel, 2000). From there we can acknowledge that perhaps musical composition itself (or at least as we perceive it) needs to be redefined.

DEFINITIONS

Creating new definitions for large ideas is fraught with danger, but I proceed regardless. I take this step not in the hope of changing our ideas about the rich and wonderful history of music, or in the hope of undermining the excellent work of music educators throughout the world. My purpose is to enable a new way of looking at something that children (and adults) do; a way of communicating, with each other and with themselves, and a way of understanding. I start with the premise that the children in my study had no real idea what musical composition was. In the very first interview I had with my participants I asked them whether they had composed music before. I was met by blank stares; not only did these children believe they hadn't composed before, they did not really know what I was talking about. Building on a previous teacher/student relationship, established two years before the study commenced, I was able to ask them about the work that they had done in my music classes, which had a strong compositional focus. They were still not convinced. If then, these children had no real understanding of what composition was; was I embarking on a foolhardy search? I think not but I was prompted to ask myself if I was using the best word. I believe that I am and that the response from the participants strengthens the need for a new definition. It is not improvisation, nor is it fine art. This is not to diminish the value of improvisation just to point out a difference.

The most suitable starting point for a definition for my purpose comes from Swanwick (1989), who defines composition as "the act of making a musical object by assembling sound materials in an expressive way" (p.43). With this definition he refers to "all forms of musical invention, not merely

works that are written down in any form of notation". This definition formed the basis of my own definition of composition for an earlier study (Reynolds, 2001). In that work I defined composition as "the construction and organisation of sounds, either original or borrowed, into a musical whole" (p.7). All this is well and good but these definitions leave out two important components: the technology and the product itself. The latter omission will not be discussed here in terms of new definitions. It has semantic implications and requires discussion about the use of the word 'composition' as both a noun and a verb, and the implications inherent in the difference and the similarity. The former omission is the most germane to this paper and one that needs to be explored if we are to find, or seek, new affordances.

Whatever definitions arise, I am at pains to state that I am not proposing another 'e' word for the lexicon; my definition goes beyond and could never be considered in contemporary eClassifications. This is not a proposal for eComposition! I seek to present a case in which the compositional processes (and the compositions themselves) of the children in my study are related to contemporary understandings (Nilsson and Folkestad, 2005) and the way technology affords (and influences) the types of music made.

A view of children's music and their musical development that draws on Swanwick and Tillman (1986) and looks for a Vygotskian approach (Reynolds, 2005) based on play and scaffolding, provides the basis for a new look into the role of the computer (as distinct from the software) and the mindsets of the child. As we look into the role of the technology and seek to understand the mindsets of children we must also look at the ways in which we understand music and composition, in particular ***children's*** music and ***children's*** composition. This look into the role of the computer leads directly to a discussion on what it affords.

AFFORDANCE

Gibson (1979) describes affordances as the perceived offerings of an environment to an organism, he describes affordances as referring "to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment" (p. 127). Affordance can further be defined as "relational properties between organisms and their environment" (Windsor, 2004, p.180); it is important for me to look at what those relations might be between my participants and the computing environment. This must go beyond ideas of software, operating systems, hardware or even anything that was going on in the actual room. A discussion of affordance, especially one that seeks to discover new affordances, must look at the organism itself and think deeply about what the environment really is. This is especially significant if we accept that the act of perception of the environment is also, at the same time, an act of perception of oneself (Gibson). To take this notion further and link it to socioculturally developed understandings (Noble, 1981; Heft, 1989) we begin to create a framework of understanding that can allow meaningful, contextual and relative analyses of children 's relationships with that electronic environment.

The ubiquity of the computer is a given in modern Western society. My study took place in a middle class suburban school in Melbourne. In this school children have access to computers at home and at school and many frequently use mobile phones, mp3 players, the Internet, electronic games, television and other trappings of modern life. They have grown up with computers and have developed mindsets about the role and place of ICT in their lives. I use 'ICT' deliberately here in order to shift discussion from an object that sits on a table (computer) to discussion about the environment of computing; its tools and affordances.

I do not believe for one moment that children are inherently 'better' at computers than adults, a view I frequently hear, but I do believe that young people, especially children, look at them differently than adults. Barlow uses the terms "natives" and "immigrants" to describe the difference and writes about cyberspace as a place similar to the 19th Century West, a place populated by natives that is a breeding ground for (amongst other things) new ideas (Barlow, 1990). While Barlow's ideas are to do with freedom and censorship he raises the concept of mindsets that Lankshear and Bigum (1998) and Lankshear and Knobel (2000) develop. This idea is one that immigrants do not understand the new space (cyberspace) the way natives do. Lankshear and Knobel use the terms 'insiders' and 'new-comers'; their arguments are to do with 'new-comers' applying old views to literacy and the use of technologies. I use their ideas to highlight an understanding by 'insiders' that leads to an acceptance of their environment, and a relationship with it that leads inevitably to new affordance.

Discussion of affordance leads to discussion of semiotics, for the interpretation of a sign can be seen as the perceiving of affordance (Windsor, 2004). This is not the place to expand on semiotics but the relationship between symbol and meaning cannot be ignored when seeking new affordance. This was made apparent in my study when the children started working in Audacity, an open source multitrack digital audio recorder. The program saves files in a project using a proprietary file extension, in order to use the files in standard applications (Windows Media Player) the user needs to export individual, or multiple, files in either mp3 or .wav format. When mixing down to mp3 a dialogue box opens asking for details of the artist, the style and the track name (Figure 1).

For the boys in the study this simple dialogue box became something of utmost significance. It afforded them the status of artist and the even higher status of artist with an album. With their new found status they set about creating the 'album' that the dialogue box demanded. This resounds with Windsor's view that, "… a crucial aspect of semiotics is the notion of interpretation, where objects and events furnish us with information not about themselves, but about other objects or events" (Windsor, 2004, p.179). So powerful was this stimulus that the boys created band names and album names, and set about competing with each other to see who would have the 'best' album. There

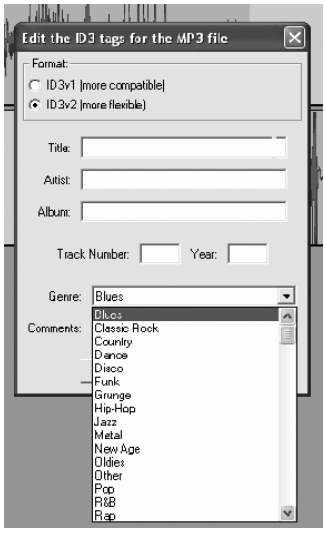

Figure 1: Audacity dialogue box

was some dispute about the nature of 'best' – most songs versus best songs – but the motivation was there. This interpretation of sign was reinforced by Windows Media Player when it too requested artist information and talked of 'play lists'.

New approaches to composition were also afforded by the technology. I have not found any reference in the literature to children's composition using the child imitating an instrument with his or her voice, yet this became a preferred compositional style for one child. It was not his only style but where technique deserted him the technology did not. The notion that he could compose an authentic, long and technically demanding lead guitar solo (with wah, wah) could not have been realised without the technology and, I argue, without his perception of what the technology afforded. It follows that this perception is an integral component of his composition and his process of composition. In fact the child even 'played' the guitar solo while recording it. 'Played' is probably not the best word as he had to hold the microphone, but his whole body was engaged in the process; it became half air guitar, half crazed rock and roll singer performance. In my observation this was not just mucking around; this playing and singing, and the accompanying movements were essential compositional components.

Another example of affordance that strengthens the case for new definitions was the use of another software application and the interpretation of a tool bar icon. The program, Home Studio 2004, is a multitrack MIDI and audio recording application. A feature of its MIDI capabilities is the ability to 'draw' drum patterns. Typically, drum patterns are difficult to sequence using a keyboard so the program provides sets of pre-sequenced drum combinations that can be 'drawn' across the piano roll view within the application. The icon for drum patterns is a paint brush (Figure 2).

The meaning and purpose of that icon is clear to anyone who has read the manual, or who has even held their mouse over it as in the figure above. Intended meaning and perceived purpose are two different things, especially when dealing with children. The pattern brush icon afforded to one child the ability to paint, not only to paint pictures but to paint music. In my immigrant view, I knew that this was not

Figure 2: Home Studio pattern brush icon

possible but of course to a native it was obvious that the tool was a paint brush, and paint brushes are for painting. The subsequent 'painting' and the sound it made was remarkable. Where does this composition and the compositions that followed (most of the children then wished to 'draw' their music) fit in any traditional definition? I argue that they don't. I also argue that they are valid and valuable offerings by children whose interpretations of signs allowed new affordance.

CONCLUSION

Swanwick and Tillman could not have studied children using air guitar in their compositions; the technology was not available to children, if it was, it was not usable. More importantly, their understandings of children's compositions and their definitions of them did not allow for it. The amount of music available today and its accessibility (and the ways in which it is made available) was unimagined in 1986. Add to that the ubiquity of computers, a generation of ICT 'insiders' and technological advances that put powerful music software into the hands of children at very little cost, and we have a recipe for new and dramatic actions, and new and different products and processes. We do not yet have in our vocabulary the definitions required to adequately investigate, analyse or assess what children are doing or what they are capable of doing in these environments. Accepting that new affordances mean new products and processes enables us to seek new meaning.

Bowman asks "what do we do to develop and nurture in our students – or in ourselves, for that matter – the habit of changing habits" (Bowman, 2005, p.157)? His call for praxis instead of "untheorised practice" resounds with my search for new definitions and understandings. Without the ability to change habits, without the ability to theorise we cannot hope to understand new environments and the relationships children have with them.

I do not have my new definition yet and I have still to come to terms with composition as both verb and noun. This paper presents the beginnings of my theorising and demonstrates ways in which children interpret and perceive in ways we have not yet managed to understand. If we are to truly understand then we have to seek not just what those interpretations and perceptions might be but that they are inevitable, and that their existence demands of us new understandings.

REFERENCES

Audacity (2004). http://audacity.sourceforge.net

Barlow, J. P. (1990) Crime and puzzlement. Retrieved 1st December, 2005, from http://www.eff.org/Misc/Publications/John_Perry_Barlow/HTML/crime_and_puzzlement_1.html

Bowman, W. (2005) More inquiring minds, more cogent question, more provisional answers: The need to theorize music education-and its research. *Music Education Research, 7*(2), 153-168.

Gall, M. and Breeze, N. (2005) Music composition lessons: The multimodal affordances of technology. *Educational Review, 57*(4), 415--433.

Gibson, J. (1979). *The ecological approach to visual perception*. Boston, MA: Houghton Mifflin.

Heft, H. (1989). Affordances and the body: An intentional analysis of Gibson's ecological approach to visual perception. *Journal for the Theory of Social Behaviour, 19*(1), 1-30.

Home Studio 2004 (2003) http://www.cakewalk.com

Lankshear, C. and Bigum, C. (1998) Literacies and technologies in school settings: Findings from the field. Retrieved 25th November, 2005, from http://www.geocities.com/c.lankshear/litandtechs.html

Lankshear, C. and Knobel, M. (2000) Mapping postmodern literacies: A preliminary chart, *The Journal of Literacy and Technology*.

Nilsson, B. and Folkestad, G. (2005) Children's practice of computer-based composition. *Music Education Research, 7*(1), 21--37.

Noble, W. G. (1981). Gibsonian theory and the pragmatist perspective. *Journal for the Theory of Social Behaviour, 11*(1), 65-85.

Reynolds, N. J. (2001) Primary school creativity and composition in a professional level music software environment. Master of Information Technology in Education thesis, University of Melbourne.

Reynolds, N. J. (2005) The computer as scaffold, tool and data collector: Children composing with computers. *Education and Information Technologies, 10*(3), 239--248.

Swanwick, K. (1989) A basis for music education. Windsor: NFER-Nelson.

Swanwick, K. and Tillman, J. (1986) The sequence of musical development: A study of children's composition. *British Journal of Music Education, 3*(3), 305--339.

Windsor, W. L. (2004) An ecological approach to semiotics, *Journal for the Theory of Social Behaviour* (Vol. 34, pp. 179--198).