

WATCHING PAINT DRY: MUSICAL MEANING IN A MILITARY CEREMONY (1) (2)

Roland Bannister, Charles Sturt University

Abstract

Much music in Australia is made in formal, institutional contexts. Practicing and aspiring professional musicians look to institutions to provide them with an infrastructure to facilitate their music making, a wider social purpose, an income, or education and training to equip them for employment as musicians. Members of institutions engage in a dialectic in which power, prestige and status are negotiated. This dialectic plays a part in the moulding of the world views of individuals, and in the shaping of the ethos of the wider society. In this paper, I report on my participant observation study of music making in one of society's major institutions; I examine the experience of soldier-musicians in the Australian Army Band Kapooka as they participate in one of the army's major ceremonies, the weekly March Out Parade. I compare the experience of the soldier-musicians with that of other participants in the parade, and then examine the significance of military music for the wider society. In doing so I cite some of the literature pertaining to meaning in ritual. I conclude by asking Conference delegates to consider what parallels may exist between music making in military ritual and music making in their own institutions.

Introduction

Music making in our society often takes place in institutions. Music educators and their students usually work in schools or universities. In Australia, the largest employers of professional musicians are the Australian Broadcasting Corporation and the Defence Forces bands. A knowledge of the relationship between musicians, the institutional contexts in which they work, and the wider society would seem to be critical to our understanding of the nature of music making.

In this paper I will examine the experience of the soldier-musicians of the Australian Army Band Kapooka in the context of their main duty, the weekly March Out Parade for graduates of the army's Basic Training Course. Because the army is one of society's most highly structured and ideologically driven institutions, and because it employs musicians to transmit its ideology, the questions pertaining to institutional contexts are thrown into sharp focus. You may be able to make some useful comparisons with music making in your institution as we consider this military example. This example may shed some light on the ways in which music making in institutions affects the world views of the musicians and of the society at large.

The First Recruit Battalion and the Kapooka Band

Each year up to three thousand-five hundred young *recruits* begin their army career by completing The First Recruit Training Battalion's Basic Training Course at Blamey Barracks at Kapooka, near Wagga Wagga. On the last Friday of their course the recruits take a final test called the *Challenge*. On the following Monday successful recruits participate in a graduation ceremony called the March Out Parade. They graduate with the rank of *private*.

The main purpose of the Kapooka Band is to accompany the parade which marks the end of the Challenge and the March Out Parade. The March Out Parade is a spectacular ritual of pomp and circumstance; it is a major event in the Army's public relations calendar.

The Kapooka Band's expert display of figure marching, and its provision of music for the marching and drill demonstration of the graduating recruits, is central to the parade.

In addition to these and other military duties, the Band performs a number of public and schools' concerts, which provide opportunities for the performance of concert band, wind ensemble and 'big band' music from well beyond the repertoire confines of military ceremonial music.

The Setting

Blamey Barracks is an incongruous mix of eucalyptus forest and hills, soft lawns and the paraphernalia of war. Its buildings and roads are set among manicured lawns and ornamental and native trees. There are landscaped ponds, replete with ducks and water hens, a picnic ground for visitors, and an outdoors playground for children. Spread across the area are the realia of military training; rifle ranges, ammunition dumps and obstacle courses. Stationary tanks and heavy weapons - khaki and metallic mementoes of previous wars - each with its polished brass plaque listing dedications and giving historical explanations, are overt symbols of an old and emphatically-defended tradition. The Guard House, whose main purpose is to house wayward recruits, is set among trees and enhanced by freshly painted red and white woodwork trim. Central to the whole area is the broad, level, bituminous parade ground.

Heavy guns set on concrete blocks at its corners point away from the parade ground, symbols of power held in check. Nearby is the 'Brigadier J. J. Shelton Band Centre'. On the side opposite the Shelton Band Centre are two large corrugated iron shelters for visitors who come to watch their sons and daughters 'march out'. These shelters flank the ceremonial dais on which the official party takes its place and from which the ceremony is conducted.

Although 'Kapooka' is set apart from the city it is seen by local people an integral part of Wagga Wagga. The army's presence is felt in the economy and culture of the city. It participates in a number of civic ceremonies throughout the year. Its activities are reported regularly in the local media. From my home some fifteen kilometres to the east, I can hear the sounds of rifle shooting or grenade practice when the wind is right. I sometimes hear the Band's drum corp on the parade ground as it assists in the training of soon-to-graduate recruits.

Visitors to Kapooka are stopped at the gate by a uniformed military guard who salutes them and addresses them as 'Sir,' or 'Ma'am', and records their time of arrival, purpose of visit, car registration number and anticipated time of departure.

The Ritual Form of the March Out Parade

In a moment I will show you some video segments of a March Out Parade. But first I want to acquaint you with the ritual form of this ceremony. How does it compare with graduation ceremonies at your institution? The main segments are

March On: the band, and the platoons of recruits, march onto the parade ground and take up their positions.

March On of the Governor-General's Banner: a three-person *banner party* (an *ensign* and two *banner escorts*) carries the banner to its position.

Arrival of the Host Officer and the Reviewing Officer: the Host Officer and the Reviewing Officer (usually the Commandant of the First Recruit Training Battalion) arrive in separate white official cars each escorted by a pair of Military Police on white military motor cycles.

Inspection of the Troops and the Band: the official party inspects the Parade.

March Past in Slow and Quick Time: a traditional custom in which the recruits demonstrate *esprit de corp* in a display of fine team work.

Advance in Review Order: a demonstration of respect for the reviewing officer.

Presentation of Trophies: trophies for skill-at-arms, physical training, best soldier, and most improved recruit are presented by civilian or military identities.

The Address: the Reviewing Officer addresses the graduating recruits; he congratulates them on their achievement, reinforces the value of the work they will do as soldiers, and wishes them well.

March Off of the Banner: the banner party carries the Governor-General's banner from the parade ground.

The March Off: the recruits, who now officially hold the rank of private, and the band leave the parade ground.

Within these larger sections of the ceremony are a number of symbolic military drills; the inspection of the recruits, the inspection of the band, present arms (with music), present arms (without music), slope arms (with music), slope arms (without music), various changes of formation, slow marching to quick march music, eyes right, a gate counter march from the band, and shouted commands. There are visual symbols of army life: clean, well pressed uniforms, the digger hats, insignia, weapons, 'the colours', the trophies. Then there are the participants themselves; the officers, the recruits, and the band, with their correct posture and regulation haircuts; all are symbolic of the military ethos.

A powerful element of military rhetoric is the appeal to tradition. When the Reviewing Officer refers to the skill attainment, team work, self discipline, love of country, the endurance of hardship, and Australia's participation in previous wars he is following a tradition which I believe has not changed substantially since the Athenian general, Pericles, in his Funeral Oration to the Athenians in the winter of 430-431BC, listed the characteristics of fine soldiers, democratic societies and the military ethos. The soldierly values Pericles listed are bravery, gallantry, manliness, valiance, and patriotism. Pericles told the people that their sons and fathers who had been killed in the first year of the Peloponnesian War had died while defending worthwhile principles. 'In the fighting, they thought it more honourable to stand their ground and suffer death than to give in and save their lives,' he reassured them (Thucydides 1954: 149). Military and nationalistic rhetoric which Australians hear on Anzac Day and on other ceremonial occasions, follows this ancient tradition.

The band's visual presence is very strong with the elements of colour, movement and music all linked to each other, and to the activities of the other participants. 'People hear with their eyes,' is a remark made by more than one soldier-musician. I suggest that the most powerful moments in the ritual are those where the music has a strong presence; the march on of the recruits, the presentation of the Governor-General's colours and the various drill and marching movements. 'Rose Glory' the regimental march of the First Recruit Battalion - the school song so to speak), and 'Waltzing Matilda' evoke powerful associations in this context. Music is even more powerful in its role as an adhesive to the other ritual elements; moving a ritual to music enhances the impression that the ritual is well performed. Olympic gymnastics and ice skating, ballroom dancing and the laying of wreaths on Anzac Day all seem to be more expertly done when performed to music. And, as Kapferer (1979b: 146) reminds us, if rituals are to be effective, they must be well performed.

The intended purpose of the ceremony is likely to be the weakest explanation of it (Moore & Myerhoff 1977: 15,16). To understand ritual activity, we need to look beyond the ritual's intended message. To do this, I will examine the experience of the participants in the March Out Parade, and the effect of military ritual on the society as a whole.

The Experience of the Participants

Army people harness the power of symbols. The March Out Parade is a symbolic rehearsal of the broad cultural understandings that participants bring with them from civilian life and the specific military interpretations which they have learnt during their time in the army. All participants have felt the powerful messages of Australian culture; they know something of Anzac and patriotic traditions. They live in a society in which paramilitary principles are ubiquitous; schools and work places have strong hierarchies of command, and emphasise team spirit and the importance of achievement. Values of the military ethos are congruent with those of sport; Pericles himself would be at home in the sports world where valour, loyalty, team spirit, self reliance, respect for the chain of command, physical prowess, efficiency, tenacity, and the will to win are familiar values.

The focus of my research has been the soldier-musicians' experience and it is they with whom I will deal in particular. The graduating recruits feel a real sense of occasion; it is they who are graduating, it is they who have completed the gruelling Basic Training Course. It is they who are being ceremonially transformed into soldiers with the status, and salary, that this will bring. It is they who have succeeded. It is their day. Their parents and friends and family share this experience. The civilian trophy presenters are ex-military people and may feel a certain pride and nostalgia as they return for the occasion. These participants normally participate in only one March Out Parade in their lives. The officers who have trained the recruits might attend up to four March Out Parades a year. These officers, I suggest, might feel something of the satisfaction that teachers feel when their students graduate. Only the band participates in all of the March Out Parades, and in the several rehearsals which occur each week.

Three key informants told me about their experience in military ceremonies; the Officer Commanding the Band Corp of the Australian Army (Lieutenant-Colonel Tony Sillcock), the drum major of the Kapooka Band (Staff Sergeant John Franklin), and a disaffected young soldier-musician whom we shall call Darryl. Lieutenant-Colonel Sillcock was Commanding Officer and Musical Director of the Australia Army Band at the seventy-five Anzac Ceremony at Gallipoli in 1990. He said:

You require a certain amount of involvement, emotional involvement, to be able to play it the way it should be played, but I guess there is a professional detachment (so) that you don't get emotionally involved to the extent that you become ineffective ... I can quote you a story of a younger soldier in my earlier days, on one of my first commands, he asked to be relieved of the duty of playing bugle calls at funerals and I spoke to him about it and he said he got too emotionally involved to perform ... I sort of explained to him that he is an actor in the play if you like, he makes the day memorable for the family, and the family will not have a very memorable day if the bugle call is a disaster. They won't understand why a professional performer, if you like, got emotionally involved to the point that he stuffed their day up ... yes we ... are showmen and you must maintain that detachment - be it a funeral, be it at a memorial service. I did the Gallipoli Dawn Service and ... Lone Pine, and I guess three quarters of the band had tears running down their face because the music was beautiful. You can be involved but you must maintain your presence.

Lieutenant Sillcock's comments raise important aesthetic questions about the engagement of musicians with the meaning of the music they perform, a topic I will return to later.

His last two sentences highlight the importance of context to the meaning of military music in a very poignant way.

Staff Sergeant Franklin discussed his role as Drum Major.

... his role's a very important one because he has to know these sort of parades, not just this March Out Parade but any parades that we do ... we travel to Albury or Canberra ... to do ceremonial parades or vice regal parades and things like that, and the drum major's got to know exactly what's going on. A lot of times when RSMs [Regimental Sergeant Majors] are running parades, they've got their ways of doing things and some times they're not necessarily correct and you've got to correct them or say, 'Listen Sir, this is what we normally do.'

John has a special leadership responsibility in the band's parade work; it is he who controls the band's movement and music. Much of John's concern with the March Out is of a technical kind; details of drill, marching, music making, getting it right. The bands in the Australian Army play an important role in the transmission of knowledge about military ceremony. Lieutenant-Colonel Sillcock's full title is in fact Director of Music, Australian Army Band Corp and *Staff Officer Ceremonial*. The Drum Major of the Kapooka Band is required to be expert in the enactment of ritual activity. John Franklin continues

Because we're doing it all the time it's just like water off a duck's back to us. We see the funny side of it from the other point of view where the parade itself, the people on parade - the troops - who don't do this thing all the time, are stuffing things up and the parade commanders are nowhere. They don't know their words of command and give the band a bit of a laugh. But at the same time, once we're doing the actual job itself that things start not happening the way they're supposed to, the band having a bit of a cackle well you've really got to think - switch onto that sort of, you know - sort of settle down a bit. But yes, most of the time the band doesn't have a problem out there...

I think the biggest thing is if you've got a lot of self-confidence that it sort of carries it through. If you can get out and sort of yell and scream and get things going then once you build up that confidence initially then you haven't got a problem ... you know how the band is going to react to you. They know how you react and how you operate so you don't get - you don't give them an inch and there's sort of no problem. I give a word of command and they sort of react straight away and they're quite good.

Darryl is a young soldier-musician who has been granted an early discharge and is eagerly waiting to take up a civilian job. Darryl felt that he was not a good musician and he thus saw little future for himself in the army. Nevertheless, Darryl presented the band a rather expensive memento when he left; the army fosters a high degree of loyalty among its members. I talked to Darryl about the March Out Parade

Oh, I just dream, think about the weekend or think about what's coming up for the rest of the week. I try to forget about work while I'm on the parade ground and, like if it's freezing cold you really can't think of anything else except the cold and if it is hot you can't think of anything but how much you are sweating, but on a nice day I drift off into my own little world.

"Well, do you listen to the [Commandant's] speech?" I asked.

The commandant? Well sometimes you do and sometimes you don't... he gives the same speech every week, so if he changes it at some stage you

might have a bit of a laugh ... but generally I think he talks for too long so you try to go to sleep...

Psychic Distancing

Questions about the degree and nature of participants' engagement with the meaning of ritual is a matter of considerable debate in the literatures of ritual and aesthetics. Kapferer (1979a: 153) believed that if a ritual was to be effective, then a connection must be made between the participants' feelings and the ritual's meaning. He took issue with Durkheim on this critical question.

In contrast to Durkheim I make the assumption that when individuals or groups express anger, fear, love, sorrow, hate and happiness in the medium of ritual, they often actually feel what they express.

Continuing his dialogue with Durkheim, he said:

It is critical (that) a ritual connection, realized and understood by participants, between the conventionalized display of emotion in performance and the real, internal and privately felt emotional and mental condition of the participants (is established).

Tambiah (1985: 131-133), argued that because ritual was formalised and conventionalised it did, in turn, distance its participants from the meaning of their actions. Ritual behaviour was not meant to express the actual emotions and intentions of the participants. Langer quoted in Tambiah (1985: 134) wrote of the importance of *psychic distancing* in ritual. Ritual involves not direct expression but the 'articulation of feelings' and a disciplined rehearsal of 'right attitudes' rather than of 'free expression of emotion.'

... the ultimate product of such an articulation is not a simple emotion but a complex permanent attitude. This attitude which is the worshippers' response to the insight given by the sacred symbols, in an emotional pattern which governs all individual lives. It cannot be recognised through any clearer medium than that of formalized gesture.

For musicians in the Kapooka Band, meaning in military ceremony is more context dependant than the theoretical literature of ritual acknowledges. Meaning for soldier-musicians depends on the frequency with which they perform a particular ritual and the status they hold in the performance. The fact that they are full-time, professional participants is an important factor in determining the nature of their experience in ritual performance; John Franklin estimates that in his seven years in the army he has performed in two hundred March Out Parades and about four hundred rehearsals. His experience of the parade is bound to be different than that of a graduating recruit. Soldier-musicians of all ranks express disdain for performing in the March Out Parade and, indeed, all military ceremonies which they see as routine. Most dislike marching and playing. They agree that the trials of the weather, working with the parade ground officers, the obvious 'melody and drums' style of military music, and the fact that the audience are there to witness the graduation of their family member, rather than to listen to the band, gives little satisfaction. The March Out Parade takes place as many as forty-eight times a year. Each March Out Parade has a number of rehearsals. The March Out follows virtually the same format each week; only the weather, and the number of graduating recruits varies. As the professional photographer who makes the video tape of each March Out said 'Watching a number of these is like watching paint dry.' The musicians see the military ceremonial work as a trade off for a career in music. Generally the Kapooka soldier-musicians spend about 50% of their week on military music; the other 50% is spent rehearsing and performing at civilian concerts of concert band music. Their attitude is generally one of 'Yes, we subscribe to the values of the military ethos, but do not enjoy or feel involved in the regular routine work of the military ceremonial.' Special ceremonies are a different

case; the Anzac Day ceremony at Gallipoli was a moving experience for those soldier-musicians who took part. Similarly, those who take a special role in routine ceremonies feel a deeper involvement than do those who simply play as band members; the Drum Major and the musician who plays the bugle calls are cases in point.

Theories of Symbolic Meaning

Langer (1978: 81-98) distinguished between *discursive* and *presentational* symbols. Discursive symbols are those which require to be set out one after the other; ordinary spoken language is the most common example. Presentational symbols may follow any order, they are untranslatable and their meaning depends on simultaneous, integral presentation. The presentational symbols of movement, colour, identities, objects and music all working together make very powerful, but nonetheless ambiguous statements. Much of their power stems from this ambiguity. Kapferer (1977: 112-113) stressed in ritual, presentational symbols reinforced each other, making their meanings fixed and stronger. Their meanings overrode, or at least overlapped, those of discursive symbols and they were resistant to attack. Because discursive symbols could be broken down into small segments they were more open to question. Myerhoff (1977: 199-200) said that rituals appealed to '... the entire human sensorium ... in their sense of drama.' 'Critical, analytic thought, the attitude which would pierce the illusion of reality, is anathema to ritual,' she wrote. 'The enemy of ritual is one who is incapable of or unwilling to voluntarily suspend disbelief - the spoil sport.' Ritual depended on the collusion of all participants in the production of the show. 'No one can stand up and boo,' she said. Rituals fail when the participants are bored, confused or self-conscious. In the March Out Parade, there are few moments when the sense of drama is relaxed, moments where the power of presentational symbols is disrupted by discursive symbolism. Of these, the Reviewing Address is the most important. Here the ideology of the military is briefly, simply and unequivocally stated.

Berger & Luckmann (1971: 146) reminded us of the important fact that all symbol systems were human creations, '... their existence has its base in the lives of concrete individuals, and has no empirical status apart from these lives.' Meanings ascribed to symbols are thus not inherent in the symbols themselves. They are ascribed to the symbols by people. Music has no meaning beyond that which is culturally ascribed; music therefore has no morality, it is the uses to which music is put that may be good or evil. Warren Bourne (1993) in lamenting the closure of the Australian Army Bands in Perth and Adelaide in June 1993, and expressing concern about the ethics of music, alerted us to the potentially insidious use of military bands and their civilian counter-parts, community bands.

The symbolic function of the band is obvious: a sanctioned and legitimate social expression of authoritarian command, conforming obedience, directed by the underscoring of law, order, defence and aggression. Now so long as the brass band is only a symbol of these values, they are acceptable. Indeed, they are probably major contributors to the continued balance and integrity of our social fabric. But when they are harnessed to the direct support of these same values, as they inevitably are in a time of national emergency or war, then the potential abuse of the affective power of the symbol menaces the very sanity of our society. Authoritarian regimes from ancient Sparta to Hitler's Germany and beyond, have fully understood and exploited militaristic music ensembles to their own ends.

In his novel *The Unbearable Lightness of Being* Milan Kundera (1985: 249) had a perceptive section on the use of parades by the totalitarian Communist regime he knew in Eastern Europe. He identified the worst aspect of Communism as its persistence in covering up unacceptable human activity by the insidious use of kitsch. The model of Communist kitsch, he said, was the May Day ceremony.

The women all wore red, white, and blue blouses, and the public, looking on from balconies and windows could make out five-pointed stars, hearts, and letters when the marchers went into formation. Small brass bands accompanied the individual groups, keeping everyone in step. As a group approached the viewing stand, even the most blasé faces would beam with dazzling smiles, as if trying to prove that they were properly joyful or, to be more precise, in proper *agreement*. Nor were they merely expressing political agreement with Communism; no, there was an agreement with being as such. The May Day ceremony drew its inspiration from the deep well of the categorical agreement with being. The unwritten, unsung motto of the parade was not 'Long live Communism!' but 'Long live life!'

Kundera's May Day Parade risks no discursive symbolism.

Conclusion

Music is a powerful symbol system. Institutions and musicians have a responsibility to ensure that music making is put to good purpose. The army uses music to reinforce and mould community values. It employs professional soldier-musicians to perform a symbolic role in ritual activity to reinforce its ideology and to enhance its public image. The army's purpose is overt, and so long as Warren Bourne's warning is heeded, and Governments are democratically mandated, the army is behaving in accordance with society's best interests. We music educators have much to learn from this military example. The use of school music to dress up the school's image, with insufficient regard to the educational development of students is an all-too-familiar problem. I suspect that music educators may be much less conscious of the ideological nature of their work than military officers are of theirs. When we hear a student band or choir performing beyond its technical ability in order to impress Mums and Dads, we are witnessing the subjugation of student musician's interests to the window dressing needs of the institution. Certainly, educational institution should ask their students to display their achievements, but the achievements displayed should be in the interest of student development, rather than cheap stunts to mask the educational reality.

Notes

(1) This paper reports on a *participant observation* study of the Kapooka Band in which I am currently engaged (Bannister 1991 and 1992). Some of the research on which this paper is based was carried out by the author under Charles Sturt University's Special Studies Program in 1990.

(2) Video-tape courtesy of Freeman's Photographic Service, Trail Street, Wagga Wagga.

References

- Bannister, R. (1992). Difficult but sensitive: participant observation research in music education, *British Journal of Music Education*, 9, pp. 131-141
- Bannister, R. (1991). Documenting the culture of communities of musicians: Some tentative findings of a participant observation study of an Australian Defence Force band. in A. Wojtowicz (ed.), *Report of the Twelfth Annual Conference of the Association of Music Education Lecturers*. Hobart: University of Tasmania, (in press)
- Berger, P. & Luckmann, T. (1971). *The Social Construction of Reality: A Treatise on the Sociology of Knowledge*. London: Allen Lane.

- Bourne, W. (1993). Ethics of the edge of the musical experience, In *Proceedings of the IX Conference of the Australian Society for Music Education*. Perth: (in press)
- Kapferer, B. (February 1979a)(reprinted 1984). Emotions and feelings in Sinhalese healing rites, in B. Kapferer (ed.), *The Power of Ritual: Transition, Transformation and Transcendence in Ritual Practice*. Special Issue Series, *Journal of Cultural and Social Practice*. No.1.
- Kapferer, B. (February 1979b)(reprinted 1984). Entertaining demons: comedy, interaction and meaning. In a Sinhalese healing ritual. In B. Kapferer (ed.), *The Power of Ritual: Transition, Transformation and Transcendence in Ritual Practice*. Special Issue Series, *Journal of Cultural and Social Practice*. No.1, pp. 108-152
- Kapferer, B. (1977) First class to Maradana, in S. F .Moore & B. G. Myerhoff, *Secular Ritual*. Van Gorcam, Assen/Amsterdam, pp. 91-123
- Kundera, M. (1985). *The Unbearable Lightness of Being*. trans. Michael Henry Heim, London: Faber & Faber.
- Langer, S K. (1978). *Philosophy in a New Key: A Study in the Symbolism of Reason, Rite and Art.*, Cambridge, Mass: Harvard University Press.
- Myerhoff, B. G. (1977). We don't wrap herring in a printed page: fusion, fictions and continuity in secular ritual, in in S. F .Moore & B. G. Myerhoff (eds.), *Secular Ritual*. Van Gorcam, Assen/Amsterdam, pp. 199-224.
- Moore, S.F. & Myerhoff, B.G.(1977). Introduction: secular ritual: forms and meanings. In S. F. Moore & B. G. Myerhoff (eds.), *Secular Ritual*. Van Gorcam, Assen/Amsterdam, 1977, pp. 3-24.
- Tambiah, S. J. (1985). *Culture, Thought and Social Action: An Anthropological Perspective*. Cambridge Mass: Harvard University Press, (1985).
- Thucydides, (1954). *History of the Peloponnesian War*. trans. R. Warner, Penguin Books, Harmondsworth.

MUSIC AS A VEHICLE OF REFORM IN 19TH CENTURY EDUCATIONAL MOVEMENTS.

Jane Southcott, Faculty of Education, Monash University

Abstract

In the nineteenth century mass movements for popular education, particularly in singing, developed in England and spread throughout the Colonies. These movements were associated with a philanthropic and religious desire to improve the lifestyles and aspirations of the 'less fortunate' and a belief that a happy, sober workforce would result in greater productivity. Three major strands in this evangelical movement were the Tonic Sol-fa, Temperance and Sunday School movements. The Tonic Sol-fa movement was instigated at a Sunday School Conference in 1841 as a means of improving the quality of congregational singing, but became far more than that. It developed its own notation which was cheap and accessible, established a system of qualifications, published copious music and an international journal. The Tonic sol-fa movement was closely linked to the Temperance movement - early 'Certificated' choirs had not achieved a music qualification but had signed the pledge of total abstinence from alcohol.

Music, as always, was the vehicle for textual messages. Words sung were easily remembered and music was the servant of charity, industry and government. This paper seeks to identify and consider some of these ideas and association.

The impetus for the inclusion of music in the popular education movements of the early nineteenth century came from the belief that music was a desirable social governor and a suitable vehicle for messages of reform. The Society for Elementary Instruction that governed schools in Paris debated the inclusion of music in the school curriculum at a meeting in June 1819. In the argument, music was identified as

a most useful helpmeet for a life of laborious toil. Not only does it sustain and refresh, it governs physical effort ... Music represents a kind of link between moral order and animal existence. It is a language which teaches gentleness and benevolence; it brings serenity of mind; it encourages order. Thus control, propriety and balance appear to follow in its train. ¹

There was consensus amongst the educational reformers that music had a place in education however, the focus was not on music education, i.e. the development of pedagogical techniques for the transmission of musical skill and knowing, but was on the use of music in education. Music was the vehicle that carried the texts with appropriate sentiments. Music was also one of the approved recreational pursuits that would replace the vices of the lower classes. Music aided the patronising, charitable middle classes, the philanthropic industrialists and the governmental agencies that saw their role as one which encouraged workers to acquire sober, patriotic, happy habits and Christian morality.

Robert Owen, the British industrialist and educationist, described the community he envisaged in *A New View of Society* ² which he published in 1813. Owen ceased to employ children under the age of ten in his factories. He established a school in which the released children were taught 'reading, writing and arithmetic ... all the "modern improvements in education." ' ³ Between 1816 and 1826, Robert Owen's educational

system at New Lanark included singing and dancing in the syllabi of both the infant and the day school. ⁴ In *An Outline of the Educational System at New Lanark* ⁵ Owen stated that,

the children are instructed in music and dancing; which are found essential to contribute toward moral refinement, and improvement. When properly conducted each of these requirements becomes a pure and natural source of enjoyment; it is a well authenticated fact, that the best method of making a people virtuous, is to begin by rendering their situation comfortable and happy. ... All the children above five or six years are taught singing, sometimes by the ear, sometimes by the notes. ... A small selection of simple airs is made for the school, every three months. The words to these are printed on sheets, one of which is given to each child. Spirited songs, in the bravura style, are found to be much more adapted to children under ten years of age, than more slow and pathetic airs; into the spirit of which they seldom seem to enter, while the former are uniformly their favourite songs, particularly any lively national airs with merry words. Almost all the children show more or less taste for music. ⁶

Music was included in education for its potentially positive influence on moral refinement, character development, aesthetic sensibilities, national sentiment and as a means of engendering happiness and satisfaction with one's lot in life. Later in the century, this perception of the role of music in education was restated by the Central Board of Education in South Australia which was concerned that the value of singing in schools was not appreciated by some persons to the extent that it deserved. The Board stated that singing should be valued because of its social benefits,

it is one of the most effective means to secure order and good discipline ... school songs can be made the medium of conveying to the youthful mind many valuable moral lessons which will never be forgotten, as well as lessons of friendship and patriotism. ⁷

Educational and philanthropic bodies appropriated music for their own purposes. The middle and upper classes had always valued music as a demonstration of cultural capital and available leisure time. The music perceived as appropriate for transmission was not that of the receiving social group - the working classes and the urban poor in the industrialised towns where music was part of a non-notated, aural tradition and an important part of cultural identity. The music deemed suitable was that of the middle and upper classes which emphasised the acquisition of skill in notational reading and the re-creation of composed, purpose written works within the classical tradition. Urban folk music was undervalued, if not dismissed, unless it had been sanitised and given the status of a "folk song" suitable for the inculcation of national sentiment. Songs such as *The Golden Vanity*, *The Ash Grove*, *The Wearing of the Green* and *Loch Lomond* lost the ability of folk music to evolve but became fixed in collections of national songs for children and recreational singing. ⁸

Many of the mass movements for popular education in England in the first half of the nineteenth century were linked to religious institutions. The various religious groups, who provided educational opportunities for the working classes, perceived the aim of schooling as the development of future congregations of committed Christians. ⁹ To this end, children should be able to read, not only the Bible, but also other religious tracts. Setting texts to music made them attractive and easier to memorise, and so it became important to develop the ability to sight-sing the melodies which provided the vehicles for religious messages. As Nettel stated,

Most denominations were anxious to improve the standard of congregational singing, and from this common need arose innumerable experiments in methods of teaching the art of singing and of reading music in some simplified manner which could be understood by a community containing, only too often, a large proportion of members either semi- or wholly illiterate. ¹⁰

Nonconformist denominations, in particular, relied on congregational singing for the transmission of much of their teaching. The difficulty of reading traditional music notation was an obstacle to many, and those responsible for the teaching of singing in these congregations sought solutions. Music was perceived as an 'ennobling' pursuit so, it was logical, that it was means of improving the lives of the 'less fortunate.' As Dobbs stated,

When the workers sang together they would forget their grim living conditions, and by the moral precepts embodied in their songs they would be inspired to give their services more liberally to their employers and live more happily with their families in their homes. ¹¹

Communal singing would keep the workers from the taverns and other 'undesirable' pursuits. Singing classes would also contribute to improvement in public worship. A contented working class was less likely to cause civic unrest and should be encouraged to feel patriotic loyalty - these messages were easily set as the texts of songs to be studied. Evocative popular folk song melodies became a staple of the singing class along-side hymns and anthems. Singing always involved song lyrics and it was by these that many of the moral, civilising and humanising messages were to be inculcated. This paternalistic approach may not have been welcomed by the industrialised working classes who had long had their own traditions of popular music making. ¹²

The first Sunday school was begun in 1780 by Robert Raikes, a philanthropist of Gloucester, England, who collected a group of street children and employed young women to teach them the rudiments of reading and religion. Gradually, Raikes' Sunday school attracted attention and became the impetus for the Sunday school movement. ¹³ The Sunday School Union was founded in 1803. ¹⁴ The Union aimed to encourage the religious instruction of youth and children, to improve methods of instruction and to promote the opening of additional Sunday Schools. ¹⁵ The Union was well aware of the importance of singing in their teaching programs and published collections of suitable vocal music for children. The Committee of the Union stated in the introduction to one such collection that,

they were not unmindful, that children had a special claim upon them for a supply of vocal music, of a sacred and also of a cheerful character, and they have accordingly published, in a cheap and convenient form, a collection of attractive tunes and pieces, which are peculiarly adapted to youthful voices and youthful feelings. ¹⁶

This collection contained 87 pieces for Sunday School devotional purposes and 61 tunes with moral and descriptive words. A few examples of the song texts show the subjects they address and messages they carry.

No. 87 *Sabbath Morning* (verse 3)

In the house of my God, in his presence and fear,
When I worship to-day, may it all be sincere;
In the school where I learn, may I do it with care,
And be grateful to those who watch over me there.

No.2 *The Bee* (verse 2)

Thus may we, from day to day,
While our time is flying,
Gather knowledge carefully,
To improve, keep trying.
May we, then, in youth or age,
From vice and sloth keep turning,
And from wisdom's pleasant page
Sip the sweets of learning

No.5 *The Poor Man's Garden*

I love the poor man's garden,
It gives great joy to me,
That little precious plot of ground
Before his door to see.
All day, upon some weary task,
He toiled with good will,
And back he comes at set of sun,
His garden plot to till.

No.8 *Victoria*

Victoria! Victoria! We hail thy gentle rule;
Victoria, the patroness of ev'ry infant
school.
The kings of old their people led
To battles fierce and wild;
'Tis nobler, far, with fostering care,
To train each little child.

No.43 *Work Away* (verses 1,2,5 & 6)

I remember a lesson which was not thrown away,
Learn betimes to be of use, don't lose too much time in play:
Work away while you're able, work away, work away.

Hands were made to be useful, if you teach them the way,
Therefore, for yourself or neighbour, make them useful every day:
Work away while you're able, work away, work away.

In the world would you prosper, then this counsel obey,
Out of debt is out of danger, and your creditors to pay:
Work away while you're able, work away, work away.

Let your own hand support you till your strength shall decay,
And your heart should never fail you, even when your hair is grey:
Work away while you're able, work away, work away.

Other songs have such titles as *My Mother*, *Honesty*, *Perseverance*, *Home* and *The Family Bible* ¹⁷ which give a clear indication of their message and content. The songs are simple, tonal melodies in the style of hymns for children.

The Temperance movement began in America. On February 13th, 1826 the constitution of the American Society for the Promotion of Temperance was adopted at a meeting in Boston, Massachusetts. Prior to this there had been several movements that advocated moderation in the use of 'ardent spirit and its kindred vices profaneness and gaming.' ¹⁸ However, moderation did not seem possible. 'Moderation had been

tried for ages and had been found ineffectual.' ¹⁹ A series of papers in various Christian and missionary journals advocated total abstinence and examples were often cited of fatal accidents caused by the use of alcohol. These fatalities were described in lurid, medical detail - cases of spontaneous combustion were particularly relished. In 1835, within nine years of the original constitution being adopted, there were more than 8,000 Temperance Societies in America with 1,500,000 members. The journals trumpeted their success - more than 4,000 distilleries had been closed, more than 8,000 dealers had ceased operation and 12,000 admitted drunkards had reformed. ²⁰ The Temperance movement spread to Great Britain. In 1829, the first Temperance Society was instituted in August in Ireland at New Ross. Scotland rapidly followed suit. The British and Foreign Temperance Society held its first meeting at Exeter Hall, London on June 29th, 1831. The movement rapidly spread throughout Europe and the British Colonies - the first Australian Temperance Society was the New South Wales Temperance Society which held its first public meeting in Sydney on May 6th, 1834. ²¹ The other colonies followed quickly - for example the *Australian Temperance Magazine*, first issued in Sydney in July, 1837, noted that Temperance advocates had been warmly received by the Governor of South Australia in August, 1838. The Governor had chaired a public meeting at which a Temperance Society was established. ²² It appears that the Temperance movement followed the British army throughout the growing empire. Cases were cited in Temperance journals of men executed for crimes committed whilst under the influence of alcohol. ²³ The Officers' Returns of the Army Commissariat in Bombay, showed that in 1837, under the influence of a newly formed Temperance Society, 51,311 gallons less of spirits had been consumed than the year before. ²⁴ Children were admonished to become total abstainers.

My dear children, Beware of spirits, such as gin, brandy, rum, and whisky. Spirits are slow poisons ... they change a man, I might almost say, into a beast. .. some people go quite mad by such drinking, and are locked up in madhouses. Others die before they become sober - some drink till they die! And what does the bible say of such. "No drunkard shall inherit the kingdom of God." .. A man who is a drunkard, loses his money - loses his senses - and loses his soul. ²⁵

Songs with temperance messages were added to many collections designed for Sunday Schools, juvenile gatherings and the home circle. The texts portrayed, often in lurid terms, the dangers of 'just one drop' and the potential rewards of abstinence. The melodic style remained simple and tonal. Song titles such as *The Demon Drink*, *Cold Water*, *Wine is a Mock* and *Sparkling Water* indicate the textual range and one verse from a temperance song, *A Drink from the Well*, gives a fair indication of the genre.

As long as I'm fearful, and do not begin
To tamper with wine, or with brandy and gin,
There's not so much danger, I thankfully know,
That I to the grave of the drunkard shall go,
But should I be tempted to take only one,
I feel that I soon should be wholly undone;
'Tis thus that so many are ruined, who think,
Uninjured, to trifle with poisonous drink. ²⁶

Until the middle of the nineteenth century the manner of teaching songs to children remained essentially unchanged from that described by Robert Owen in the 1820s as 'sometimes by ear, sometimes by the notes' with a selection of simple airs, 'particularly any lively national airs,' the 'merry' words of which were printed on distributed worksheets. ²⁷

In 1841, at a conference of Sunday School Teachers in Hull, there was an extended discussion on the state of congregational singing. John Curwen, a young nonconformist Independent minister, was an invited speaker at the conference. He was a gifted teacher and respected lecturer on educational matters. The conference chairman, impressed by Curwen's abilities, 'promptly commissioned him to undertake a review of available methods of teaching singing and to recommend "some simple method."' ²⁸ Curwen surveyed the available methods and came across the teachings of Sarah Glover. With due acknowledgment, he adapted and extended the system to form the Tonic Sol-fa method.

Sarah Glover published her *Scheme for Rendering Psalmody Congregational* in 1835. ²⁹ The title demonstrated that her aims in developing a method of teaching class music were in sympathy with the mission of Curwen. When Curwen was introduced to Glover's book he had already tried to acquire musical understanding but with only limited success. Curwen described the difference between his past attempts at learning music and the discoveries he made in Glover's book.

I soon found that the old methods of teaching [music] had deceived me with the shell of knowledge instead of giving me its kernel. The *thing*, music, I perceived to be very different from its names and signs. I found it much more simple and easy in itself, and incomparably more beautiful than the explanation of the signs of the old notation, with which elementary books are commonly filled. I had easily mastered them all, and had also studied a 'first book' on harmony, but I seemed to know nothing of music till then. I now saw that Miss Glover's plan was to teach, first, the simple and beautiful *thing*, music, and to delay the introduction to the ordinary antiquated mode of writing it, until the pupil had obtained a mastery of the thing itself. Her method was ... the most simple of all - the most easy to teach, and the most easy to learn. The methods of teaching which are truest to the nature of the thing taught, and the least artificial, are always the most successful. In the course of a fortnight, I found myself ... being able to 'make out' a psalm-tune from the notes, and to pitch it myself! It was the untying of the tongue - the opening of a new world of pleasure ... ³⁰

Glover's method was the result of twenty years experience and consideration in teaching class singing. She rejected a catechistic approach but believed that children should be taught music as they learn to speak - deducing theory from practice and not *vice versa*. Curwen followed the general outline of Glover's system and also emphasised the importance of aural training - a note should be heard 'mentally' before it was sung. ³¹ Students were taught to place notes by their relative position within a key, not by their absolute pitch or by reliance on a given musical pattern. Each degree of the scale was also represented by a handsign. In the specialised notation system devised the degrees of the scale were represented by the initial of their solmization syllable and rhythmic values were represented by bar-lines and punctuation marks. The Tonic Sol-fa notational system could represent considerable musical complexity and obviated the need for expensive staff notation publishing. The Tonic Sol-fa system was, however, far more than an alternative notation. It was an educationally sound approach to the teaching of sight-singing through aural training and a carefully sequenced program of music learning and activity. This was a marked development from the situation described by Robert Owen.

The Tonic Sol-fa method was linked to an evangelical ministry and available to many through the Sunday School movement. The method itself soon became a movement. Curwen founded a publishing house to issue music in the Tonic Sol-fa notation system which was cheap and accessible to congregations, classes and their teachers. Curwen

emphasised the importance of training teachers in the system and devised a series of qualifications that could be completed by correspondence courses or at vacation schools. This growing organisation was administered by the Tonic Sol-fa College in London. All this did not happen overnight. Curwen began his research in 1841 but it was not until 1876 that the Tonic Sol-fa College became an incorporated body.³² Curwen also established a journal, the *Tonic Sol-fa Reporter* (later called the *Musical Herald*), to support the work of Tonic Sol-faists throughout Great Britain and further afield. In 1842 Curwen first published a series of lessons on the Tonic Sol-fa system in a Sunday school journal, the *Independent Magazine*, which he edited.³³

Associated with the Sunday Schools and the Temperance movement were the juvenile Bands of Hope, first formed in 1847. These groups incorporated singing in their programs from the very first. The *Musical Herald*, noted, on the occasion of their 50th jubilee, that

Bands of Hope have from the first used singing to express and inspire their principles, and the *Band of Hope Chronicle* publishes the first song used in the movement, "Come, all ye children, sing a song," which was rendered at Leeds, Nov. 9th, 1847, ... The pioneers in this work, as in other religious and social movements, availed themselves at first of well-known melodies on which to float their poetry. The words in question were sung to the air "In the days when we went gipsying."³⁴

Throughout the issues of the *Tonic Sol-fa Reporter*, and the subsequent *Musical Herald*, references were made to performances by Temperance choirs and to the availability of suitable published song texts. In 1870 the editor stated that, 'at various times we have endeavoured to supply the specific wants of Bands of Hope and Temperance Societies, by printing various pieces suited to their requirements.'³⁵ Frederick Smith, the conductor of the Crystal Palace Band of Hope concerts, gave an address on 'Singing in Connection with Band of Hope work' in which he stated that

every one of the singers was certificated ... the Band of Hope Union ... [was] not a musical, but a temperance society. If their singing did incidentally show for the [Tonic Sol-fa] system they were glad, but it was necessary for them to have always in mind their great aim.³⁶

A concert described in the *Tonic Sol-fa Reporter*, January, 1872, stated that, 'every one of the singers was certificated - they all held the total abstinence pledge.'³⁷ In 1891, at their Jubilee in London, Tonic Sol-faists congregated from across the world. Many speakers offered remembrances and observations on the role of the system. John Spencer Curwen, the son of John Curwen stated that, 'Tonic Sol-faists are not only musicians, but musical missionaries. They desire to make music an aid to worship, to temperance, to the education of the people, old and young, to reinforce every effort of public welfare.'³⁸ At the same occasion, the Reverend T.W. Drury, the principal of the Church Missionary College, spoke from the standpoint of foreign missions. He stated that,

it had been suggested that the temperance cause ought to be married to the Tonic Sol-fa system, but this would be a case of bigamy, as the foreign missionary cause was already married to Tonic Sol-fa. Missionaries who had been trained by Mr. Birch at their college often wrote home to students urging them to pay more attention to music. The Tonic Sol-fa training was considered of great use in learning a language. For that reason Bishop Burton, of the Chinese field, asked him to send men with a cultivated musical ear.³⁹

With the advent of the Tonic Sol-fa system the inclusion of singing within the programs devised by the Sunday School Union and the Temperance movement gained an educational basis which addressed learning in music rather than music's uses in education. However, statements made at the Tonic Sol-fa Jubilee held in London in 1891, fifty years after John Curwen's first commission, indicated that music was still perceived as a vehicle in the service of a social aim. W. W. Miller of Glasgow stated that 'John Curwen was the man who showed that there is no enmity between music and religion ... he showed church people that music is the handmaid of religion and of every moral movement.'⁴⁰ Although the advocates of the Tonic Sol-fa method did teach the components of music in a sound, pedagogical sequence they still perceived music as a servant, not a subject worthy of consideration for intrinsic reasons. Further, the chosen repertoire of songs comprised purpose written exercises, folk songs, simple hymns, melodies from classical composers and works composed within this genre. The works were immutable and correct performance was important. The reading of notation, both alternative and traditional, was stressed. Despite its musical value, the Tonic Sol-fa system yet again reinforced the cultural disenfranchisement of the people it professed to assist. Music was the handmaid of religion and reform and an approved recreational pursuit. Music was the vehicle upon which improving textual messages could be carried and, as such, it aided the philanthropic industrialists, the charitable middle classes and governmental agencies. In many respects, this perception of the place of music in education has not changed. There is still a valuing of music for its potential role in improving the 'tone of the school,' developing patriotic sentiments and appropriate group identification. The culture thus transmitted is frequently not that of the recipients but that of the governing agency. The music we teach in class music programs too often centres on the transmission of Western classical models via an emphasis on the acquisition of skills - both in performance and in musical literacy. As music educators our own training has often omitted popular music styles and left us ill-equipped to deal with young adolescents interested in a wide range of popular styles, most of which is transmitted by aural models. This is not a new problem - demonstrably it has existed in educational circles for nearly the past two hundred years. Robert Owen's description of class music teaching in the early nineteenth century is not very different from what we often find today - teacher selected songs, chosen for appropriate textual content, distributed word sheets and melodies taught by ear or occasionally by note. Why and how we teach music appears to have remained fairly constant, despite the efforts of many music educators. Consideration of past practice can inform current thinking - in this case, such consideration is illuminating.

References

- ¹ Lavignac, A. & Laurencie, L. de la (1925). *Encyclopédie de la musique*. part II, pp.3581, cited in *ibid.*, pp.142-143.
- ² Owen, R. (1813). *A New View of Society*. in Cole, G.D.H. (1927). *A New View of Society and Other Writings by Robert Owen*. London: J.M, Dent & Sons., *passim*.
- ³ Mackerness, E.D. (1966). *A Social History of English Music*. London: Routledge & Kegan Paul, p.129.
- ⁴ *ibid.*, p.68.
- ⁵ Owen, R. (1824). *An Outline of the Educational System at New Lanark*. cited in Rainbow (1989). *Music in Educational Thought and Practice*. Wales: Boethius Press, p.163.
- ⁶ Silver, H. (1969). *Robert Owen on Education*. cited in Rainbow, (1989). *op. cit.*, p.163.
- ⁷ South Australian Government Gazette (1874). p. 578, cited in Vick, M. (1982), 'The Cultural Politics of the Music Curriculum' in *Association of Music Education Lecturers National Conference Report*. May, p.19.
- ⁸ Mason, E. (1929). *McDougall's British Songster*. London: McDougall's Educational Company.
- ⁹ Musgrave, P.W. (1968). *Society and Education in England since 1800*. London: Methuen & Co., p.11.
- ¹⁰ Nettel, R. (1944). *Music of the Five Towns 1840 - 1914*. London: Oxford University Press, p.4.
- ¹¹ Dobbs, J.P.B. (1964). *Three Pioneers of Sight-Singing in the Nineteenth Century*. Newcastle Upon Tyne: Institute of Education of Durham and Newcastle, p.1.
- ¹² Mackerness, E.D. (1966). *op. cit.*, p. 133.
- ¹³ Hurlbut, J.L. (1910). *Organizing and Building up the Sunday School*. New York: Abingdon Press, p.2.
- ¹⁴ Smith, M.J. (ed.) (1903). *The Hundredth Year*. London: Sunday School Union, p.13.
- ¹⁵ Northcott, C. (1952). *For Britain's Children*. London: Sunday School Union, p.25.
- ¹⁶ Clark, T. (ed.) (1855). *The Juvenile Harmonist*. London: Sunday School Union, preface.
- ¹⁷ *ibid.*, *passim*.
- ¹⁸ 'The Rise and Progress of Temperance Societies' (1837). *Australian Temperance Magazine*. vol.1, no.1, July 1, p.1.
- ¹⁹ 'The Rise and Progress of Temperance Societies' (1837). *Australian Temperance Magazine*. vol.1, no.1, July 1, p.2.
- ²⁰ 'The Rise and Progress of Temperance Societies' (1837). *Australian Temperance Magazine*. vol.1, no.1, July 1, p.2.
- ²¹ 'The Rise and Progress of Temperance Societies' (1837). *Australian Temperance Magazine*. vol.1, no.1, July 1, p.3.
- ²² 'Domestic Intelligence' (1838). *Australian Temperance Magazine*. vol.2, no.2, August, p.27.
- ²³ 'Military Execution' (1838). *Australian Temperance Magazine*. vol.2, no.2, August, p.27.
- ²⁴ 'India' (1839). *Australian Temperance Magazine*. vol.2, no.9, March 1, p.143.
- ²⁵ 'Address to Children' (1838). *Australian Temperance Magazine*. vol.1, no.10, April 1, pp.159-160.

-
- 26 Leslie, J.H. & Ogden, W.A. (n.d.). *Silver Bells*. Wakefield: W. Nicholson & Sons, pp. 78-79.
- 27 Silver, H. (1969). *Robert Owen on Education*. cited in Rainbow, 1989, op. cit., p.163.
- 28 Rainbow, B. (1980). *John Curwen: A Short Critical Biography*. Kent: Novello, p.17.
- 29 Mackerness, E.D. (1966). op. cit., pp.157-158.
- 30 Curwen, J. cited in Rainbow, B. (1980). op. cit., pp.17-18.
- 31 Rainbow, B. (1983). 'Tonic Sol-fa,' in Arnold, D. (ed.), *The New Oxford Companion to Music*. 2 vols., Oxford: Oxford University Press, vol.2, p.1832.
- 32 *Tonic Sol-fa Reporter* (1876). Mar.1, p.72.
- 33 Rainbow, B. (1980). op, cit., p.22.
- 34 *Musical Herald* (1897). no. 587, Feb.1, p.50.
- 35 *Tonic Sol-fa Reporter* (1870). Apr.15, p.318.
- 36 *Tonic Sol-fa Reporter* (1872). Jan.15, pp.20-21.
- 37 *Tonic Sol-fa Reporter* (1872). Jan. 15, p.20.
- 38 *Universal Song*. (1891).vol.1, no.3, Oct., p.36.
- 39 *Universal Song*. (1891). vol.1, no.3, Oct., p.36.
- 40 *Universal Song* (1891). vol.1, no.3, Oct., p.34.

NURTURING CREATIVITY: MUSIC PLAY FOR CHILDREN UNDER 2.

Louie Suthers, Macquarie University, Institute of Early Childhood

Abstract

Very young children are active learners. They learn through play, constructing their own knowledge about the world by exploring, manipulating and investigating objects.

Music play is a developmentally appropriate way for toddlers to learn about music. Their learning about sound-producing objects reflects this same cycle of exploration, inquiry and utilisation. The study focuses on the outcomes of music play activities for play, musical conceptual development and the creativity of children's responses to the musical materials provided.

This paper presents the findings of a research project with a group of fifteen one-year old children in long daycare centre. The researcher set up a music play mat for a session once a week over four months. Each mat had a particular tone colour as its focus. The timbres chosen included drums, bells, shakers and rattles, sticks, kitchen utensils and scrapers. The toddlers were free to choose to play with the sound makers or any of the alternative outdoor activities such as sandpit, bikes, climbing frame, or painting. The toddler's play with the sound sources was entirely of their own choosing. They were able to use the sound sources in any way they liked. Some of the children found it quite unexpected and novel ways of using the instruments. This imaginative, inventive play involves the same processes associated with the generation of original thoughts and ideas.

The preliminary finding of this research appear to indicate that music play is not only developmentally appropriate for toddlers, but that it supports and nurtures creative thinking and behaviour. Video recordings were used to illustrate the paper.

Introduction

Creative behaviour is defined by Isenberg and Jalongo (1993: 5,6) as original behaviour which has a low probability of occurrence. Creative behaviour is always appropriate and relevant to the specific situation. It is also fluent and flexible, exploring and using nontraditional approaches to problem solving.

Very young children possess an innate curiosity to learn how things work. The way they learn is through play. Jones (1974: 1) believed that young children have 'eager interest in the essentials of music - interests in the possible sounds to be found in drums and bells and piano, in hollow blocks and doors, in wheels on bumpity pavements, in their own voices'. Toddlers explore, manipulate, experiment with sound makers like sticks and bells. They shake, mouth, bang, scrape, hit, squash, stand on or throw sound makers to explore the sounds that can be produced. Having explored thoroughly, they use the objects in play, in novel and creative ways.

In a recent position statement on appropriate curriculum content, NAEYC (1991: 26) stated that the way in which very young children learn 'reflects a recurring cycle that begins in awareness, and moves to exploration, to inquiry, and finally, to utilisation'. Gonzalez-Mena and Eyer (1993: 125) supported this notion and suggested that infants

and toddlers were 'naturally creative' and as 'newcomers to the world... they want to find out how everything works. They don't want to be told; they want to find out on their own. ... They are instead builders of their own understandings'.

Play is a key way in which young children learn. Play is defined by Johnson and Ershler(1982: 137) as "behavior that is intrinsically motivated, freely chosen, process-oriented, and pleasurable". Play is also acknowledged by early childhood educators including Bredekamp (1987), Hendrick (1990), Isenberg and & Jalongo (1993), Maxim (1993), and Van Hoorn, Nourot, Scales and Alward (1993) as central to any developmentally appropriate curriculum for young children.

Activities such as exploration, manipulation and experimentation are part of young children's play and according to Garvey (1990: 48) are 'obviously associated with learning'. These behaviours are also frequently associated with creativity. Garvey continued '... a playful orientation is characteristic of creativity'. When young children engage in exploratory or creative play they are uninhibited; they become completely absorbed in the activity and frequently display sensitivity to both internal and external stimuli (Holden, 1987 cited in Isenberg and Jalongo, 1993: 6). These behaviours are also associated with creativity.

This study focuses on the outcomes of music play experiences in terms of toddler's for the development of musical concepts (including tone colour, dynamics and duration), and the creativity of the children's responses to the musical materials provided.

Method

The setting for this research was the one-year-old room at a long daycare centre. There were 15 one-year-old children in the play room. Their ages varied from 13 months to 23 months at January 1, 1993 (mean age 17 months). Of the 15 children, 11 were boys and 4 were girls.

For one session each week, the researcher organised a music play activity for the toddlers. They were quite free to participate or not, as they chose. The data was obtained from 16 sessions over 5 months.

The music play activities included mats, sound lines (where sound makers were hung from a rope) and dancing tapes (where the toddlers were free to move and dance as they chose). These activities were set up as part of the outdoor environment in a small play area accessible only to the toddlers. Being outside meant that the children were able to make as much noise as they wanted, without disturbing any other groups. Each of the music mats was set up with a particular tone colour as a focus. The focuses of the mats included drums, bells, shakers, kitchen utensils, tapping sticks, a set of wooden German rattles and bells especially made for young children called *Spielen und Lernen* (play and learn) and cardboard cylinders from paper towel rolls. The sound sources were selected to provide open-ended play materials, a mix of familiar and unfamiliar items and the potential for various playing techniques. All items used were selected with due attention to safety concerns. Many toddlers mouth toys and other play equipment as part of their exploration, so all items had to be checked for potential dangers such as sharp edges and small parts which could be broken off and either swallowed or inhaled.

The toddlers in the playroom spanned a fairly wide range of ages and developmental levels. While most were able to understand simple statements or requests, many did not speak at all at the start of the investigation. Those who did speak, initially did so in one- or two-word utterances such as 'sticks' or 'more'. Over the five months of the research, more children did begin to speak and one girl began to use short sentences. All the children were able to walk confidently and without assistance. There was a wide range of ability with regard to physical strength and co-ordination. For example some were

able to hold and shake a shaker in each hand while others clenched the same shaker with both hands to play with it.

In each session, the researcher sat at the music mat for the entire period, in what Gerber (1991: cited in Gonzalez-Mena and Eyer, 1993: 64) referred to as, 'wants nothing' mode. That is, she was available to play with the children, but open to whatever happened. The researcher had no preconceived goals or outcomes for the play, she did not initiate play, nor did she try to manipulate the children's play to achieve particular results. At all times the play was controlled by the children and was never teacher-directed.

Other play activities were also available to the toddlers during these sessions. These outdoor play activities included sand play, painting, bikes, balls and climbing equipment. The time planned for outdoor play from thirty to fifty minutes, usually determined by the weather.

Results And Discussion

The outcomes of this exploratory and creative music play varied for each individual. As anticipated, some children participated far more actively than others. Many children exhibited great persistence and attention to their music making. In an age group that is frequently characterised as having a very short attention span, some children concentrated on their play for over ten minutes. In one session, a boy danced and played sticks to recorded music for twenty five minutes, obviously delighted and engrossed in his play.

Play

During these outdoor sessions, the toddlers were entirely free to come and go from the music play activities as they chose. At first, some children were understandably reticent about the presence of a 'newcomer' and needed several sessions before their curiosity overcame their shyness and they happily explored the activities available.

Most toddlers who participated in these music play activities were involved in solitary play or parallel play, absorbed in their own exploration and sound making. Some children involved the researcher in their play. She responded to the children who sought interaction by speaking, singing, chanting or cuddling them, whichever was appropriate. For example, in a drum play session, one child initiated a 'drum talk' conversation using a large African drum. He drummed out a short pattern and looked towards the researcher. When no response came, he repeated his drum question, again pausing for a reply from the researcher. He then tapped her hand and looked pleadingly into her face. Having become the undivided focus of her attention he drummed his pattern a third time. The researcher replied with a complementary response. The drum dialogue between the toddler and the researcher continued for approximately two minutes.

The toddlers' preference for solitary play, parallel play or interactive play with an adult, is consistent with Garvey's (1990: 35) findings. Garvey found that between toddlers aged from 10 to 24 months there was likely to be a low level of interaction between the children. She attributed this to their greater interest in toys and objects than their age contemporaries who were likely to behave in erratic and unpredictable ways. She held that toddlers needed to interact with cooperative adults to learn the social skills that in time would allow them 'to sustain a mutually enjoyable encounter with a volatile and equally inept playmate'.

As the investigation proceeded, there was an increase in toddler-toddler play incorporating the sound makers. During the fifth month of the investigation, some children began to play in a more interactive way with their peers. Some of this behaviour was quite unsocial, like snatching objects from another child, other play was briefly

cooperative. For example two boys played with some hand bells. They passed bells to each other and then both ran around the sand pit ringing their bells and calling loudly.

Conceptual development in music

There were many musical outcomes from the music play sessions.

The toddlers experienced a variety of *tone colours*. They produced and heard skin sounds, metal sounds, wooden sounds, plastic sounds; all produced in various ways, striking with sticks, beaters, hands and fingers; shaking; and scraping. Sound sources can also be used singly or in combination. A plastic milk bottle partly filled with macaroni and a headless tambourine suspended on a sound line can be shaken alternately, at the same time or struck together to produce yet other sounds. The children also experienced and used *dynamics* - loud and soft sounds. Sometimes these sounds were produced on the same sound source such as a drum or a frypan played loudly and softly. On other occasions they were produced by different sound sources; a plastic bottle-shaker partly filled with dry macaroni makes much more noise than one filled with grains of rice. While the children did not have the language to verbalise their observations, from their gestures and utterances it was quite apparent that they could perceive the differences. Some toddlers played with the *durational* aspects of music. They played around with fast sounds and slow sounds or invented little patterns of long and short sounds.

Pitch differences intrigued other toddlers. Included in the sound sources for the bell mat, was a set of cowbells of various sizes. One boy was fascinated by the different-sized bells. He picked up each in turn, holding it in both hands and then shook it carefully. Sometimes the sound was muffled and sometimes he repositioned his hand to hold it by the very top which produced a clearer tone. He was certainly able to discriminate the differences in pitch between the bells. [Michel (1973) found that at seven or eight months, babies can discriminate between pitches a semitone apart]. However, it is unlikely, but possible, that he associated the size of the bell with the pitch it produced; smaller bells producing higher-pitched sounds than the larger bells. Cardboard cylinders encouraged some toddlers to experiment with vocal sounds - deep, gruff sounds like 'a monster', high-pitched sounds and sounds with undulating frequencies like a siren.

Simple *structural* devices like question and answer conversations' were investigated by some children. This usually involved toddlers interacting with the researcher in a 'your turn, my turn' pattern. [Stevenson and Lamb (1981) have observed that this type of socially interactive turntaking by babies and their mothers has been exhibited by infants as young as 3 months]. It may well be reasonable to assume that children over 18 months of age could use the same structure of interaction in a musical context.

Creative responses

Many of the children's responses were quite unexpected and surprising to both the researcher and the centre staff. During the bell music play session, two girls filled their cow bells with sand and discovered the effect which that had on the sound. It silenced it totally! Another child retrieved the plastic sand-sieve from the sand pit. He placed two cowbells in the sieve and carried it around like a tray with the bells rolling and rattling as he went. Later he stopped, and scraped and rubbed his fingers and the bells across the sieve producing quite different timbres. On shaker day, one boy took a maracca and hammered it on the plastic plank which was suspended between two A-frames producing a most unexpected sound. Another boy put one rattle into the fish tank, perhaps to discover what would happen to the sound. It sank! And on one of the drum sessions, rather than playing on any of the seven drums available, one child preferred to use his drumsticks on the upturned plastic crate which had been used to carry the drums. For ten minutes he was happy to beat out different rhythm patterns. *All these responses were quite unexpected but they were imaginative, novel, uninhibited and creative.*

Perhaps the most important outcome of all this exploratory and creative play with sound sources is what Katz (1987: 153) would term the 'disposition' to play with music, to explore, investigate and invent with sounds. Katz believed that through learning experiences, children acquired not only knowledge and skills but also dispositions and feelings. She defined dispositions as 'relatively enduring habits of the mind or characteristic ways of responding to experiences'. *Music play can help children develop a disposition to participate in music activities and to create with music.*

Conclusion

Music play is a developmentally appropriate approach to music for children under two. Toddlers need opportunities to play with sound makers and sound-producing toys and simple instruments. Music play can also form a significant component of music experiences for toddlers in long daycare centres.

Music play stimulates the curiosity of young children to explore the sound potential of their environment. It can be highly imaginative, as the children themselves set the parameters for their own investigation. There are no upper or lower limits to music play because the children themselves control the level at which they engage in the play. The play can be as simple or as sophisticated as each child chooses. Music play also affords opportunities for children to practise and reinforce their musical skills and ideas. By providing toddlers with opportunities to play with the sound sources in ways *they* choose, we are also nurturing and supporting the same kinds of behaviours that are important in creating music.

References

- Bredenkamp, S. (1987). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8*. Washington D.C. : NAEYC.
- Garvey, C. (1990). *Play*. Cambridge, Massachusetts: Harvard University Press.
- Gonzalez-Mena, J. & Eyer, D.W. (1993). *Infants, toddlers and caregivers*. (3rd ed.) Mountain View, California: Mayfield.
- Hendrick, J. (1990). *Total learning: Developmental curriculum for the young child*. New York: Merrill.
- Isenberg, J. P. & Jalongo, M.R. (1993). *Creative expression and play in the early childhood curriculum*. New York: Merrill.
- Johnson, J. E. & Ershler, J. (1982). Curricular effects of play on preschoolers. In D. J. Pepler & K. H. Rubin (Eds.), *The play of children: Current theory and research*. Basel, Switzerland: S. Karger.
- Jones, E. (1974). *What is music for young children?* Washington, D.C. : National Association for the Education of Young Children.
- Katz, L.G. (1987). Early education: What should young children be doing? In L. Kagan & E. Zigler (Eds.) *Early Education: The National Debate*. New Haven, Connecticut: Yale University Press.
- Maxim, G.W. (1993). *The Very Young. Guiding Children from Infancy Through the Early Years*. (4th ed.) New York: Merrill.

- Michel, P. (1973). The optimum development of musical abilities in the first years of life. *Psychology of Music*. 1, 14-20.
- NAEYC (1991). Guidelines for appropriate curriculum content and assessment in programs serving children ages 3 through 8. *Young Children*, 46 (3), 21-38.
- Stevenson, M. B. & Lamb, M.E. (1981). The effects of social experience and social style on cognitive competence and performance. In M. E. Lamb & L.R. Sherrod (Eds.) *Infant social cognition: Empirical and theoretical considerations*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Van Hoorn, J., Nourot, P., Scales, B., Alward, K. (1993). *Play at the center of the curriculum*. New York: Merrill.

YOUNG CHILDREN'S CREATIVE MUSIC THINKING: DEVELOPMENTAL, RANDOM OR INTERACTIVE?

Max Reeder, Charles Sturt University.

Abstract

Given the proliferation of research this century of the phenomenon of creativity, the practical implementation of teaching to facilitate music improvisation and composing by young children would seem to be a natural outcome.

Though some educators are convinced that a 'display' of creative products becomes its 'raison d'etre', other psychologists and researchers have investigated the more elusive area of the creative process, to provide theoretical models and measurements of creative thinking. While the recent application of this experimental work is gaining momentum, understanding the continuum of creative thinking among younger children becomes essential in the structuring of any music curriculum.

This paper is divided into three sections. First is an overview of creative thinking in the context of levels of thinking, critical thinking and problem solving approaches. This forms the basis of the second section which compares the developmental stages approach to other process orientations adopted by some researchers of young children's creative thinking. Integrated into this comparison will be examples of creative musical behaviours which impact on the child's emerging understanding. Finally, brief reference is made to assessment procedures and possible teaching strategies for the implementation of creative music making.

Creativity - Some Definitions

In discussion of this amazing phenomenon of creativity, some educators have situated creativity as the highest level of thinking. Others refer to its relationship with emotional and affective dimensions. Some believe it should be expressed in a final product, while others define the inspirational spark as the entire process. Clark (1992: 48) cogently argued that creativity *synthesises* the categories of the brain / mind functions of thinking, feeling, sensing and intuiting. 'Restrict any of these functions and you reduce creativity. It includes a spark from another dimension'. A thumb-nail sketch of each function will be made, prior to presenting a defence of this integrative definition.

Most researchers agree that the element of creative thinking is of a high order level. For example, Bloom's Taxonomy (1956) of the different levels of thinking started with knowledge, proceeding through comprehension, application and analysis before reaching the stage of synthesis and evaluation. It is this area of synthesising, with the ability to put ideas together in a new way, which constitutes creative thinking. For the rationalists, there has been an accumulation of literature and tests of creativity, which, for example, Parnes (1967: 6) viewed 'as a function of knowledge, imagination and evaluation', containing processes of 'fact finding, problem finding, idea finding, solution finding and acceptance finding'. Those who adhere to the *rationalist* definition, continue to search for tests to identify and evaluate creative people, finding the sensing, feeling and intuitive functions less easy to measure.

For the proponents of the *feeling* perspective, the emphasis is on the emotional well-being and the self- actualising qualities of a person. Creativity forms more of an attitude or belief system.

Thus for Hallman (1963: 132), creativity was defined as 'a way of conducting one's life rather than in terms of the number and kinds of objects which one may have produced'. The interdependence of the different views of creativity is reflected in May's (1959: 57-58) *sensing* interpretation, which combined an outcome or product approach with emotions, claiming that 'creativity is bringing something new into birth... as the highest degree of emotional health'. Its embodiment in a form which is considered of value to a society, based on how original, inventive or imaginative the product is and how long it survives, are vital criteria in evaluating creativity.

The fourth dimension of *intuition* is the least explored, yet probably constitutes the higher levels of consciousness in creating. Koestler (1964: 177) stated, 'The temporary relinquishing of conscious controls liberates the mind of certain constraints which are necessary to maintain the disciplined routines of thought but which may become an impediment to the creative leap... Language can become a screen which stands between the thinker and reality. This is the reason why true creativity starts where language ends'.

If we extend the rationalist approach a little further, we may accept that Guilford's extensive research (1959; 1967; 1971) and his conclusion that creativity involved components of *divergent thinking* as well as *convergent thinking* has established a flexible perspective for educators. This ability to view a problem from a number of different positions is particularly relevant for the young child exploring and experimenting with musical ideas. But there are inherent problems in this approach. As Cohen (1989: 169) pointed out, 'highly creative people, rather than generating many ideas, concern themselves with the correctness, appropriateness and social relevance of ideas'. Secondly, Cohen (1989: 169) concluded that divergent thinking tests may not predict real-life creativity.

While Guilford established the cognitive abilities of fluency, flexibility, originality and elaboration as axiomatic in creativity, he proposed the affective or feelings components of curiosity, awareness, sensitivity, risk-taking, imagination and perseverance as being of equal importance. These integrated components underpin major aspects of the model of creative thinking in music devised recently by Webster (1989) which has become a fruitful catalyst for current research. It is here, also, that a degree of congruence exists with Clark's previous definition of creativity.

While arguing that most children engage in divergent thinking or *generative thinking*, Feldhusen (1985) asserted that children - particularly gifted and talented children - needed to develop the ability to assess their ideas. This he termed *critical thinking*. Piaget (1977: 81)) defined it as *reflective abstraction*, 'a process of reflecting on and putting events or thoughts into relationships, which lead to new understandings not inherent in the thoughts or events themselves'. Other researchers referred to it as *reflective thinking*, (Small, 1987; Pognowski, 1987; Davidson, 1990), with McPherson (1991) applying reflective thinking directly to the analysis of two similar music compositions.

Creative thinking in music by young children:

Specifically, what of the creative process as it applies to young children in music? There are studies which indicate a diversity of views about the origins and practice of creative music thinking by young children. Some of the conclusions raise the issue of nature and nurture, with Pond and Moorhead (1978) undertaking an ethnographic study based on the hypothesis that children possess *innate* musicality, that this musicality contains distinctive characteristics and is structured by its own nature inherent in the young child. As indicated in my paper last year (Reeder, 1992), the nurturing environments that provide musical opportunities for creating music, such as the family, school, peers in play, community and culture, benefit young children's musical development.

Another view discerns a qualitative distinction between the creative *product* (improvisation and composition) and the creative *process* (growth and development) as articulated by Kuzmich

(1988). Within this duality, there is a third variable of the *person*, producing a definition that 'Creativity... is an interaction of a person or persons with a process to produce a product' (Balkin, 1990: 30).

Clear distinctions have recently focussed on creativity for children as against that for adults, whether in intent, process or eventual outcome. Kratus (1989: 94) for example, suggested that 'for many, if not most children, creativity is an end unto itself, not as a means to create a product'. So, the 5 year-old child may accidentally discover the delightful timbres made by a beater on a glockenspiel, cymbal or gong, which may motivate her / him to experiment further by using the handle rather than the head of the beater in a sweeping motion on these same instruments. The 'feedback' for the child is often exhilarating!

As an extension of this, Cohen (1989) agreed with the conclusion of Siegler and Kotovsky (1986) that there were no definitions of creativity that linked childhood and adulthood. Though musical invention of something new to the child but not new to the world is sufficient for it to be considered creative, Cohen (1989: 170) suggested that a 'bridge is needed to connect what is called creativity in childhood to the type of creativity seen in eminent adults'. More recent trends have emphasised the cognitive frameworks and specific mental processes of creativity and creative thinking in young children, while simultaneously acknowledging some or all of the integrative dimensions of the emotional, sensing and intuitive factors referred to by Clark. Hargreaves (1989: 72) in summarising the various levels that characterised children's musical development as structured by Swanwick and Tillman (1986), concluded that 'a spiral of assimilation and accommodation exists within each of these levels, mapping children's developmental shift from an absorption with their own work to an appreciation of tradition and the social aspects of their work. Thus this growth reflects the child's increasing ability to decentre from self'.

In summary, a number of definitions have been presented which are equally valid in separate cognitive, emotional, sensing and intuitive domains, but which collectively represent the complex and integrative functions of the creative act and processes. Reflective thinking is seen as a vital culminating stage in creative processing by children who have moved through the egocentric stage of experimentation. Some researchers have distinguished between the innate, the evolutionary, and the clear distinction from childhood to adult processes as significant approaches to music creativity and its outcomes. There is increasing interest, though, in the integrative model being appropriate for and adaptable to young children's creative processes in music.

Creative Thinking in Children: Linear, Random or Interactive?

A number of theories of learning established by psychologists this century have been specifically applied at various times to the learning of music. The adaptation of a *developmental stages* model, for example, has become well established by educators, as a guide to phases of creative processes from childhood to adulthood. This has been described as a *linear trajectory* (Cohen 1989: 178). An alternative view states that creativity results 'from the interactions of the systems of knowledge, affect and purpose in a *network of enterprises*' (Cohen 1989: 178). Other researchers believe that random experiences via discovery learning is a more appropriate explanation, while others pursue a pedagogical and information-base approach. Some teasing out of these linear, random and interactive interpretations will follow.

The *developmental stages* approach lies in the belief that creativity (as with all learning) is evolutionary, therefore is qualitatively different in its expression at different times in a person's life. Kratus (1989), for example, believed that for young children, the sheer pleasure of exploring a particular idiom, such as using a pentatonic scale as a springboard for melodic inventions, was more rewarding than the adult's concern for achieving a finished composition. This evolutionary view is a significant standpoint because it acknowledges that creativity can be activated and nourished, and is susceptible to intrinsic and extrinsic life forces. Therefore a stages model does have the flexibility of being applicable to a range of ages in which certain

characteristics may be exhibited. Its disadvantages appear to be that it is linear and invariant, and that it appears not to take advantage of situational factors, such as peers and siblings or varied environmental influences both social and cultural. Allowing for these differences, I have chosen to discuss a four-stage model comprising exploratory, experimental, productive and self-evaluative stages.

There seems to be agreement that the first stage in the creative process is *exploratory*. Taking a broadly cognitive perspective, Wallas (1926) referred to this stage as a preparation of initial ideas and sketches. Webster (1990) indicated that preparation involves time for the child to play with ideas. Those ideas may be 'global' and 'diffuse' according to Werner (1961), but the unrelated sequence of notes gradually take shape and 'integrate' into phrases and some awareness of tonality. Other educators emphasised the *sensory* nature of this exploration. The 0-3 year-old child investigates and experiments with the *timbre* of musical materials and is fascinated by the extremes of *dynamic* levels (Swanwick & Tillman, 1986; Moorhead and Pond, 1978). Flohr (1985) concluded that the physical, tactile and auditory pleasures of musical improvisations by children 2-4 years, be termed *motor energy*.

The second stage of *experimentation* has led to a greater diversity of interpretations. Cognitive views reveal the internal processes of learning and creative thinking in music. Allowing the unconscious to take over from the conscious has been referred to as incubation (Wallas, 1926) or subconscious imagery (Webster, 1990). A focus on the psychomotor dimension sharpens, as the 4-5 year-old child begins to manipulate its 'internal' ideas and improvisations, through a developing motor control of voice and instrumental techniques.

The third stage is characterised by *production*. Termed as the *illumination* stage by Wallas (1926: 181), the child is 'deliberately rehearsing certain sounds in the imagination' and is continuing various experimentations from which formal properties emerge. Structural characteristics such as tonality and repetition of larger patterns featured in studies by Flohr (1985), while Davies (1992: 46) cogently argued that her 5-7 year old song composers convincingly displayed 2-4 bar phrases, established a 'frame' with a beginning and ending, used patterns of alternation and repetition and also adopted an underlying structure of borrowed material. Additional studies reveal a clearer sense of beat, metre and rhythm (Reinhardt, 1990) and changes in speed and dynamic levels (Swanwick & Tillman, 1986).

It is during this productive stage that young children may move from a private, exploratory and egocentric processing of music to a gradual willingness to share ideas with others. In doing so, they may assume fragments of melodic, rhythmic and structural characteristics of songs previously learned in the home, pre-school and playgrounds, and integrate them into their own songs and instrumental inventions. Andress (1992: 1), for example, referred to these two strands of song acquisition (early improvised songs and the songs of the culture) as developmental in nature which are 'to be nurtured and valued'.

The final stage referred to in most of the literature is *self-evaluative* in nature. Wallas (1926) called it the *verification* stage, others detailed it as an evaluation of intent, process and product (Tait & Haack, 1984). Balkin (1990: 32) took it a stage further, claiming that 'the creative person must continually rethink, reconsider, replace, redo, reaffirm, reprocess, rewrite and reconceptualize'.

Process orientations

While acknowledging that the creative process for children has developmental features, there are two approaches referred to earlier which do not necessarily reflect Piaget's invariant stages: a *random discovery* approach and an *interactive* approach. Though each approach is interconnected with, and dependent on, the children's relative level of skills, personality traits and environmental conditions and materials, they do present a different theoretical perspective for our consideration. The Pillsbury Studies from 1939-44 (Moorhead and Pond, 1978) provided a remarkable, detailed and comprehensive longitudinal and naturalistic study of musical creativity by children aged two to six years. While accepting that there have been

justifiable criticisms of the findings, which include the validity and reliability of the study, observer bias and interpretation, (Pond is a composer) the results reveal, nevertheless, the possibilities for creative expression by quite young children. Given the 'laissez-faire' situation and attitude to the arts at Pillsbury, it perhaps seems natural that Pond's (1981: 11) conclusions arose from the children's spontaneous play. He found that young children had 'an innate apprehension of formal procedures', that improvisation was vital in the development of this innate musicality and that the free use of polyphony rather than harmonic procedures was 'most consonant with their musical instincts'.

The second interactive approach was offered at a more complex level by Webster (1990) whose conceptual model synthesised the thinking, feeling, sensing and intuiting functions of children and applied these to their music creativity. This comprehensive model is similar to a wider aspect of creativity outlined by Cohen [1989] of Gruber's view (1981: 178) that 'creativity results from the interactions of the systems of knowledge, affect, and purpose in a *network of enterprises*. It is the networks developed among and between these enterprises that permit construction of novelty'. While Webster acknowledged that the model was not designed in developmental terms, he concluded that it is equally applicable to young children as to other ages. I am still grappling with this conclusion! For example, the *incubation* stage of creativity would appear to be limited in scope for younger children, who generally do not possess a range of skills or conceptual frameworks on which to establish their ideas, or reliable memories, or a significant degree of audiation. Instead, this stage is often replaced by intuitive experimentation (the third level) either vocally, or with a variety of available instruments.

Finally, in this comparative mapping of approaches to young children's music creativity, exciting evidence is emerging that a creative child may well be working in various modes of a so-called 'developmental sequence' **all at the same time**. This is vividly illustrated in Davies (1992: 21, 22) analyses of three young girls evolving vocal improvisations and compositions mentioned previously.

I take the view that not only are all three aspects (materials, expression and form) 'visited' at an early age, but the role of structure in music is so important that we should expect it to play a crucial, leading part in the young child's development as a musical thinker.

Davies (1992:42) argued that the girls *intuitively* knew music's structures 'as an image of time' Bruner defined this intuitive process as 'the act of grasping the meaning, significance or structure of a situation without explicit reliance on analytical apparatus'.

To summarise, I have compared three approaches to music creativity by younger children: linear, random discovery and interactive. If our goal is to support linear development, we must continue to challenge and refine the existing long, sequential and rigorous spiral of learning carefully planned by classroom teachers at all levels. But if we wish excellence and a greater breadth of vision to emerge, we need to re-examine the values of an approach which encourages fantasy, play and imagination, supported by an environment rich in people, space and diverse materials. In turn, this will touch not only the cognitive, but the feeling, sensing and intuitive functions of the child who will be 'at liberty to explore his world and pursue his own internal quests' (Cohen 1989: 179).

Implications For Teaching Strategies

Teachers need to discover for themselves what is involved in the different aspects of creative learning and to analyse how they thought, felt and sensed and then evaluate these processes. Then they may come to grasp the process of creating that young children move through, when they make spontaneous leaps into the unknown, for example, or rework a rhythmic or melodic pattern through a number of permutations.

Though idealistic in most schools' strategic plans today, research at the Pillsbury School in the forties and the Project Zero team's naturalistic studies in the eighties, discovered that children's *play* was a significant influence on their sound experiments and became a stepping stone for generating spontaneous songs and explorations with music elements. Therefore, the provision in

according to Moore, allows a flexibility for the teacher to provide specific guidelines in the experimental stage, or alternatively, occasionally to provide no parameters. Andress (1992: 1) referred to these alternatives as 'Guided Group Play' and 'Special Interest Areas', which meet the diverse needs of young learners.

Thus, rather than focussing on a specific technique or teaching program, as the way to stimulate creative thinking, Cohen (1989: 177) suggested that 'children should be encouraged to develop many heuristics for doing creative work'. By discovering the strategies that fit their own learning styles and that suit a particular topic, children will grow in autonomy and pride of accomplishment in the continuum of creative behaviours. This will allow teachers to know where a child is functioning and to help the child realise his or her level of excellence and interest. It is incumbent that we consider the fostering of a creative environment, which allows more free time to explore and experiment. There is then a greater possibility that creative music making will develop on a parallel continuum with the more preferred listening and particularly performance oriented activities in the classroom.

References

- Andress, B. (1992). Understanding song-making behaviours of young children. *Early Childhood Music Education Conference*. (Unpublished). Sydney.
- Andress, B. (1992). Creating effective music learning environments. *Early Childhood Music Education Conference*. (Unpublished). Sydney.
- Balkin, A. (1990). What is creativity? What is it not? *Music Educators Journal*.. 76, [5], 29-32.
- Bloom, B. & Krathwohl, D.(1956). *Taxonomy of educational objectives; Handbook 1: The cognitive domain*. New York: David McKay Co.
- Clark, B. (1992). *Growing up gifted: developing the potential of children at home and at school*. 4th Ed. New York: Macmillan.
- Cohen, L. (1989). A continuum of adaptive creative behaviours. *Creativity Research Journal*. 2 [3], 169-183.
- Davidson, L. (1990). Tools and environments for musical creativity. *Music Educators Journal*. 76 [5], 47-51.
- Davies, C. (1992). Listen to my song:a study of songs invented by children aged 5-7 years. *British Journal of Music Education*. 9,19-48.
- Feldhusen, J.F. & Treffinger, D.J. (1985). *Creative thinking and problem solving in gifted education*. 3rd Ed. Dubuque, IA. Kendall/Hunt.
- Flohr, J. (1985). Young children's improvisations:emerging creative thought. *The Creative Child and Adult Quarterly*. 10, [2], 79-85.
- Guilford, J.P. (1959). Three faces of Intellect. *American Psychology*. 14,469-479.
- Guilford, J.P. (1967). *The nature of human intelligence*. New York: McGraw-Hill.
- Guilford, J.P. & Hoepfner, R. (1971). *The analysis of intelligence*. New York: McGraw-Hill.
- Hallman, R. (1963). The commonness of creativity. *Educational Theory*. 13, 132-136.
- Hargreaves, D. [Ed.] (1989). *Children and the Arts*. Open University Press. Milton Keynes.
- Koestler. A. (1964). *The act of creation*. New York: Macmillan.

- Kratus, J.(1989).Orientation and intentionality as components of creative musical activity.In J.W. Richmond [Ed.] *The proceedings of the Suncoast music education forum on creativity*. 93-104.
- Kuzmich, N. (1988). The issue of creativity in music education. *Canadian Music Educator*. 29 [4] 35-44.
- McPherson, G. (1991). The nature and scope of creative thinking in music: A review of the literature with implications for music teaching and learning. Melbourne: A.S.M.E. Conference presentation.
- May, R. (1959). The nature of creativity In H.H. Anderson [Ed.] *Creativity and its cultivation*. New York: Harper & Row. pp.58-66.
- Moore, J.L. (1990). Strategies for fostering creative thinking. In *Creative thinking in music*. Music Educators Journal, May, 39-43.
- Moorhead, G. & Pond, D. (1978). *Music for Young Children*. Santa Barbara,CA. Pillsbury Foundation for the advancement of the Arts.
- Parnes, S.J. (1967). *Creative behaviour guidebook*. New York: Charles Scribner.
- Piaget, J. (1977). *The development of thought; Equilibration of cognitive structures*. New York Viking.
- Pognowski, L. (1987). Developing skills in critical thinking and problem solving. *Music Educators Journal*. 73 [6] 37-41.
- Reeder, M. (1992). The comparative influence of informal and formal environments on the creative processes and products of young children. In *The Transformation of Music Praxis:Challenges for Music Education*. 228-237. Sydney: XI Vth A.M.E.L. Conference Proceedings.
- Reinhardt, D.(1991). Pre-school children's use of rhythm in improvisation In J.Kratus, Growing with improvisation. *Music Educators Journal*. 77,[3]35-40.
- Small, A. (1987). Music teaching and critical thinking: what do we need to know?. *Music Educators Journal*. 74 [1] 46-49.
- Swanwick, K. & Tillman, J. (1986). The sequence of musical development. *British Journal of Music Education*. 3 [3] 305-339.
- Tait, M. & Haack, P. (1984). *Principles and processes of music education*. New York: Teachers College Press.
- Wallas, G. (1926). *The art of thought*. New York: Harcourt, Brace and World.
- Webster, P. (1990). "Creativity as creative thinking". *Music Educators Journal*. 76 [5] 22-28.
- Werner, H. (1961). *Comparative psychology of mental development*. New York: Science Editions.

FILM AND ELECTRONIC MEDIA STUDENTS AND MUSIC COMPOSITION

Carol Biddiss, University Of South Australia, Underdale

Abstract

This presentation is about the process of designing an ethnographic study of technologically-based music composition by film and electronic media students. As background to the study, part of the presentation will consist of screening of student work completed in one semester. Images and soundtracks were created asynchronously using Amiga computers. Image and sound were edited to form the final product. These works were the first complete products made by students using the sequencing software, Bars and Pipes, and a Korg M1 synthesiser.

One focus of the methodology design has been a description of features of the culture. There are three main influences at work; the S.A. School of Art (which supplies half of the student population) with its emphasis on creative individual expression; the Independent Film-maker Community with its emphasis on creative collaboration; and the film and television industry with its emphases on technical standards, hierarchical working methods and creative expectations. Other important features are the 'production centre' approach to the academic program, the absolute dependence on advanced technologies and the high degrees of independence and motivation of the students.

The research data will be collected in the first semester of 1994 and will form part of a descriptive account of what happens when students are introduced to composing technologies in order to encourage them to produce original music as part of soundtracks for their own works. The technological artefacts to be used are; computer musical instruments (CMIs), samplers, MIDIs (musical instrumental digital interface), computers, sequencing software.

This paper examines three notions: democratisation of music-making, the rise of multitrack recording and computer assisted learning. These notions inform the design of a research project proposed for 1994, semester 1. The research will take the form of an ethnographic study of a group of students using computers and computer musical instruments to compose music for film and electronic media. From this research I hope to formulate some implications about how tertiary students, from a variety of musical or not so musical backgrounds, may best learn music, when their chosen course or career is not substantively in the field of music.

Notion 1: Democratisation Of Music?

Alan Durant (1990), a lecturer in English Studies at the University of Strathclyde and also a musician with experience in performance, studio recording and broadcasting, raises some important arguments against the popular idea that MIDI (Musical Instrument Digital Interface) technologies are bringing about a major *democratisation* of music.

He identifies three parts to the claim. Firstly, MIDI is relatively cheap.

'The claim for democracy in this idea is that everyone can *buy* MIDI, and so have access to the means of musical production;' (Durant 1990: 193).

Secondly, everyone can have input into the definition or shaping of the technology.

Thirdly, the skills-threshold is attainable so everyone can *operate* music software. This, supposedly, makes users powerful.

These three claims are made, in the main, by instrument manufacturers who undoubtedly see musicians as consumers of technology. In their eyes, the more widespread the music-making the better. It may be possible in a 'developed' economy for many people to buy MIDI instruments, as indeed many people can buy a car or a video camera, but not everyone can buy all of these things and the other myriad products that could equally lay claim to having a 'democratising' effect. In reality, most musicians cannot afford to keep up with the pace of technological change.

The 'low skills-threshold' argument for democratisation is also problematic for Durant. 'Low-skill' musical practices discourage professional elites and blur distinctions between amateur and professional, thus offering new possibilities for people previously excluded, but such practices also undermine established roles of musicians trained in continuing traditions of making music. Is the drum machine a new instrument for the drummer, or the new 'drummer'. Both possibilities exist. Which is the more democratic tendency? Either way the electronic instrument maker wins.

' . . . what is clear is that unless appeal is made either to a general conception of economics and production, or to an ideology of musical purpose, it is unlikely that any single political content can be attributed to the digital music innovations _ especially at so early a stage, and concerning technical developments whose possible users are so diverse. (Durant, 1990: 194)

Durant's contention is that the real problem of access is not about who gets the equipment and music-making opportunities but who has the raw materials and who has the distribution channels.

By raw materials he means sounds, melodic figures, rhythms, sampled bites and quotations. A wide range of musics can now be made using MIDI techniques, but the questions must be raised; Who decides what musics get into the public domain, what can be quoted and how much does it cost to quote?

It is not the vein of arguments about cost, technical specification and skill-threshold which should drive the democratisation debate according to Durant. He claims that the more valid threefold argument would concern distribution of musics into the public domain, the social meaning of music and the value of music.

An interpretation of Alan Durant's argument could be that a smokescreen has been set up. Attention is drawn to the so-called democratisation of the music-making process, whereas in fact, the channels for distribution of cultural 'products' are highly controlled and what is at stake is an enormous multinational market.

It may be, however, that a more democratic kind of music distribution is possible than the non-interactive, 'produced' CD, record and audio tape. The telephone can be seen as a democratising influence. Digital music can be 'distributed' via telephone-type communications systems. There are already music groups of various kinds on bulletin boards. MIDI files can be sent anywhere that a phone line, fibre optic or satellite signal will reach. ISDN, Integrated Services Digital Network will provide a new style of broadcasting, with huge databases of music retrievable in tiny detail. People who receive such digitally encoded kinds of music would need to decode it and play it back through computer musical instruments. At this time, one such module of instruments retails for

around one thousand dollars. The relative cost is almost certain to drop, and the interactivity of such a system is likely to make it a very appealing adjunct to the computer-controlled home entertainment centre.

By way of comparison with a democratic use of a new technology, I offer a consideration of an 'in house' electronic mail system as described by Feenberg (1990). He gives an account of the phenomenon of distributed networking, using the *Vax Notes* as an exemplar. The company, Digital Equipment Corporation, decided not to control the content of the network. The result was that the social world of the company doubled into a 'real' and a 'virtual' community. The network nourished an interchange that bore fruit in a conference, "Applied Heidegger", which was attended by professionals from many varied fields, people who wanted to overcome the engineering culture which dominated computer practices.

According to Durant (1990) there is a new digital music culture concerned with production, circulation and understandings. This new music culture also concerns the more general relationships among composers/writers, performers and audiences and not just those in the new digitally-based styles/genres, the digital sub-culture.

Digital music technologies are creating a new set of relations. This is the location of the paradigm shift, in the human relationships. University courses in music and sound engineering are available (one such in Hong Kong). From the beginning of this century, musicians have been making choices about whether they perform to audiences, produce recordings or engage in both activities. Those who produce recordings are reliant on sound engineers, who, in the past have not necessarily had musical training.

Notion 2: History Of Multitrack Music Recording Technology

Wayne Wadhams (1990) in his brief history of the multitrack recording studio writes this by way of introduction.

'To make recordings that transcend the technology used to create them . . . is the real challenge.' (p3)

He identifies four stages in the development of the recording studio. In the first stage, until the 1940s, music was recorded direct to disc, or for film, direct to optical soundtrack negative.

In the second phase dating from late 1940s, the overdub was achieved by using two tape recorders and live microphones to add a second layer of sound to a previously recorded tape.

'In the history of record production, this simple step rivalled the invention of the wheel.'
(p4)

In 1960, Ampex released a stock model capable of playing three tracks, so beginning stage three; multitrack recording. This enabled some early pop records to be produced in stereo, music left and right, lead vocals mixed into the centre. In 1964 came the Ampex 4-track, in 1969 the 8-track, in 1970 the 16-track recorder. The point of this short survey is to highlight the speed of development. The Ampex MM-1000 16-track package cost almost \$35,000 and the top studio rate was more than \$100 per hour. 'Home-based studio' recording of this quality was not possible at that time.

1972 saw the rise of 'alternative environment' studios (rural settings) and mobile recording vans. Some of the best recording engineers went freelance.

'Just as the film industry had converted from studio to independent production in the late 1950s, so the record industry left the nest ten to fifteen years later.' (Wadhams, 1990: 7)

In the 1970s new formats and devices became available; noise gates, stereo plate reverb, acoustic delay, expanders. Then aural exciters, digital delay, reverb became desirable, musically and technically, in the quest for the new arresting sound. Synchronisation became the standard in 1978 with time code stored on floppy disk. Following that came interlock of sound and video playback for film score and jingle work.

Stage four was digital recording. In 1977 the 3M Corporation brought out a 32-track digital machine, the DDS. It was extremely costly and complicated and, despite obvious sonic advantages it was discontinued in 1982. Meanwhile, 2-track video-based digital systems were being enthusiastically used in classical and jazz recording giving excellent sound quality. There was no provision for overdub and punching in and editing was limited. However, this method suited the musical genre. Mid 1980s saw digital recording as the standard with the format as compact disc.

In 1988 there was another technological proliferation with the introduction of computer-monitored mixing consoles, digital reverb, dedicated effects systems, synthesisers, MIDI, drum machines, sequencers, digital multieffects and computers.

Studio engineers reacted to this overwhelming rate of change by forming SPARS, the Society of Professional Audio Recording Studios, which had a brief to

'restore a reasonable pace to the rapid conversion from one professional recording standard to the next. The continuing costs of obsolescence, downtime for the installation of new equipment and retraining of house engineers all add up to a bill that most studios can't pay.' (Wadhams, 1990: 8)

The wonderful machines have made it difficult to keep up to the professional standard without raising studio rentals beyond reach.

Studio ownership is a risky business. At this time, rates vary from \$35 to \$400 per hour.

What this analysis shows is that speed and cost of technological change are related to the ability of a group to adapt and pay. Although the designers of innovation may be able to supply the new, the potential users may not be ready. It is heartening to music educators to realise that the commercial arm of the 'music industry' is also facing up to resourcing and retraining dilemmas.

Alan Durant (1990) says that the multitrack

'... restructured studio working relations by increasingly involving the recording engineer in complex manipulations of the raw material provided by musicians. Deferred decision-making led to important compositional inputs from traditionally 'non-musical' studio personnel. This has redefined what is understood by 'composition' by altering working relations, and *techniques*, on the basis of changed opportunities presented by characteristics of the *technology*. (Durant, 1990: 179)

The notion of multitrack has not only changed the working relationships of musicians and technicians, but has also led to the computer-based equivalent of magnetic tape multitrack – the sequencer. The reel-to-reel has become 'virtual'.

Notion 3: Computer Assisted Learning

According to Holland (1989), in traditional CAI, computer assisted instruction, the student is being managed. When the students use the computer as a tool, they are in control. The computer becomes an empowering agent.

One such tool is the CMI, computer musical instrument, which may allow the student to compose and play music normally beyond their level of performing skill. Two faults of early instruments of this nature were that they had less than satisfying timbres and also there were only limited means of controlling musical input. Holland speculates about how artificial intelligence could be applied to contribute to the learning of composition skills thus providing new opportunities for music composition.

'Very few people compose music. Until the last decade or so, the rarity of the pre-requisites ___ ability to play instruments, access to musicians to perform works, the ability to read and write music ___ put all but the most rudimentary music composition skills out of the reach of most people. The advent of cheap electronic and computer musical instruments, tape recorders and music editing software has removed many of these barriers.' (Holland, 1987: 11)

Multi-track tape recording obviates the need for knowledge of formal notation. A multitude of tonal colours is available through the two processes of synthesis and sampling. Even the severely disabled can compose using sequencers, music editors and CMIs which are widely available and getting cheaper.

Great Britain has revolutionised its ideas about teaching music by including composition in its curriculum for all school children aged from five to sixteen (HMI 1985).

What guides are available? Peers, masterworks and teachers are the traditional guides. Where does AI fit in to making sounds and making music?

'AI can be seen as two interweaving strands: one is the "study of ideas that enable computers to be intelligent" (Winston 84), the other is an attempt to understand the principles that make *any* intelligence, human or machine possible.' (Holland, 1987: 12)

The second way of using the computer as a tool is embedded in the intelligent tutoring system paradigm, (ITS).

There are three requirements for an ITS.

1. It should be able to perform or discuss articulately the task in hand
2. It should be able to build up knowledge about what a particular student knows in order to grasp the teaching moment or diagnose misconceptions
3. It ought to have explicit knowledge of ways of teaching

Simon Holland names four areas of music composition about which we have explicit knowledge

1. Music Theory
2. Aural Training
3. Harmonisation
4. Some highly formalised and rather artificial styles of composition, (eg. perhaps Invertible Counterpoint) (Holland, 1987: 12)

The first two he describes as containing rudimentary skills. In a discussion of harmonisation he cautions against the too strict application of rules of thumb and the fact that an ITS cannot accommodate solutions outside its inbuilt rules. He advocates an approach where the tutor makes explicit its limitations.

The third way for the student to be in control is catered for in the intelligent tools and instruments paradigm. One way in which Artificial Intelligence could be used to improve music editors is by consideration of *object based* rather than *note based* representations of say, phrases, ostinati and themes.

'In an object-based music editor, completely arbitrary collections of musical events could be designated to be a single object, and operated on as such.' (Holland, 1987: 14)

Operators as well as objects can be represented by single icons, such as tiles. (The program in use for this research project uses objects such as tiles representing a bar with note events.)

Interpreting or performing a masterwork might contribute indirectly to composition skills. The sounds of an orchestra can be replaced by a machine, but there is no suggestion that the subtlety of relationships and interpretation can nor could be replaced.

'In the area of jazz improvisation . . . Levitt (83) has written a program that "negotiates mutual harmonic, melodic and thematic constraints to produce a solo from a chord progression and melody" using the AI techniques of propagating symbolic constraints.' (Holland 1987: 17)

The area of games could be explored in order to apply what little we know about musical composition and what AI can do. Aleatory and random methods have been used by many composers, notably Mozart and John Cage. On a continuum extending from the completely randomly generated to the completely created by a humanly intelligent composer, AI methods are viewed as leaning slightly towards the intelligent.

Conclusion

There are three angles from which I want to approach this research;
 learning music through composition
 composing music digitally
 composing music for film and video.

I want to gather rich descriptive data about what the students think they have learned of music in that short time.

I want to gauge their musical understandings at the start of the course.

I want to investigate the supposed differences in digital composing methods; synthesisers and other CMIs and their relationship with traditional instruments; graphic notation and its relationship with traditional staff notation; multitrack sequencing and inner hearing; using a computer program with inbuilt musical knowledge and skills; working relationships in the composition and production process.

I want to analyse the students' descriptions of the process of making a whole film or video product including the music component of the soundtrack.

The intention is to use the ethnographic research method of participant observation; to work inside the 'culture' and find out what are the useful principles to be gleaned from a highly specific production-oriented music program. Their experience of music-making presents, I believe, a challenge to conventional methods of teaching and learning music.

I suspect that the appeal for adults of learning to compose music using new technologies is at least threefold;

1. Computer musical instruments are designed to provide a user with low-level skill, a high degree of control over a variety of high quality timbres.
2. The speed of the computer allows real-time manipulation of musical events, like the tape-recorder, but more easily.
3. The 'nowness' of the technology has a redemptive effect allowing the students to start afresh with the feeling that the technology may cover their own perceived inadequacies as musicians.

The use of today's populist technologies in education is not without problems, and certainly does not provide the complete answer to the many and complex questions facing music educators. Are we driven by the technology, is it advancing and taking us along with it? Do we have to provide the latest technological artefacts so that our students may prosper, get jobs, be fulfilled? This is of great concern to educators who have limited resources and who are under pressure to provide the best in learning technologies. There is a great danger that technological determinism will infect curriculum designers instead of curriculum designers affecting the design of new technologies. Teaching, performance and research in this area will enable us, in collaboration with our students, to participate in the determination of applications and design of music technologies.

References

- Durant, A. (1984). *Conditions of Music*. London: Macmillan.
- Durant, A. (1990). A new day for music? Digital technologies in contemporary music-making' in *Culture, Technology and Creativity in the Late Twentieth Century*. Philip Hayward (Ed.) London: John Libbey.
- Feenberg, A. (1990). post-industrial discourses. In *Theory and Society*, Vol.19 No.6 pp709-38.
- Goodwin, R. (1978). *Seminar: Music in Film*. A.F.T.R.S., Sydney.
- Holland, S. (1987). *How Computers Are Used In The Teaching Of Music And Speculations About How Artificial Intelligence Could Be Applied To Radically Improve The Learning Of Composition Skills*. Milton Keynes: The Open University.
- Wadhams, W. (1990). *Sound Advice: the Musicians Guide to the Recording Studio*. New York: Schirmer Books.

INVESTIGATING ASSESSMENT ALTERNATIVES: THE FEASIBILITY OF DEVELOPING A COMPUTER INTERACTIVE MUSIC TEST

Jennifer Bryce, Australian Council for Educational Research

Abstract

This paper will describe steps in progress to explore the feasibility of developing a computer interactive music test which requires only basic computer hardware for operation, but in which the quality of the music is not compromised. A 'model' which has been developed will be demonstrated. It has the following features: multiple choice questions; graphics, notation and printed questions appear on the computer screen; students activate the sound stimuli (for each question) as they are needed; students will be able to receive immediate feedback (if desired); and a record of each student's responses will be stored and a report of results will be produced.

The model to be used for demonstration purposes will be a revised version of a criterion-referenced music test published by ACER in 1976. The model will aim to measure skills in the following areas: pitch discrimination, lengths of sounds, volume discrimination, patterns recognition and knowledge of musical signs and symbols.

It is believed that a test of this kind will have advantages in terms of saving paper, providing the possibility of individualised testing within a group setting, enabling students to move through the test at their own pace, enabling a variety of reporting modes (such as immediate feedback to the student) and enabling flexibility of question grouping. It may be that this format could be used for item banking. At present we would have in mind use by schools and private studio teachers.

This paper outlines preliminary thoughts and early steps in a feasibility study to see whether it would be worthwhile to develop a computer interactive music test. The work is being undertaken by Jennifer Bryce and Margaret Wu at the Australian Council for Educational Research.

Why Develop a Computer Interactive Music Test?

After spending nearly four years teaching in a small Victorian country high school I have become aware of how comfortable students are using computers and how readily they seem to learn through the medium of computer technology. Placed in a professional position where it is possible to experiment, to some extent, with different models of test development, it seems logical to explore possibilities of using computers in test construction. It seemed that a test where students 'interact' with computers in various ways could have a number of advantages in the area of music. There are, however, broad concerns to consider when planning a music test. To what extent can they be addressed by using a computer interactive format?

Concerns when Planning a Music Test:

Zerull (1990) has argued that teachers are often reluctant to evaluate students in arts education because the means of doing so are narrow and superficial - consequently what is taught becomes narrow and superficial. It is of paramount importance to ensure that any test developed is concerned with the 'real stuff' of music programs rather than incidental areas which may be easier to measure.

One concern is the need to use words. Words are used to describe what we are intending to measure. Thus words are used to try to define an art form which itself surpasses the

constraints of words. Biggs (1971) has pointed out the danger that 'words used in classification may reduce to static terms an art mainly characterised by change, movement, and progression'. There is a danger of applying labels to particular aspects of music and assuming that there is a common understanding of these meanings. There are also acknowledged different shades of meaning. For example, when we speak of 'structure' in relation to music which proceeds through time, it has a somewhat different meaning from its usage in relation to spatial or concrete arts. Secondly, words may be used to ask questions relating to music. There is a danger that the test may be measuring understanding of the words rather than the particular skills intended to be measured.

There has been a tendency for developers of music tests to 'segment' elements of music, rather than to consider a piece of music as a whole, as in a 'holistic' approach. It seems likely that Seashore (1919) has greatly influenced early attempts at musical assessment and his approach was very segmented. He analysed the 'musical mind' and delineated thirty aspects of musical talent he believed to be essential to music. These areas ranged from sense of pitch, and tonal memory to voice control and register of voice.

With a segmented assessment, the quality of a performance is seen as the sum of various components, such as $SKILLS + INTERPRETATION = PERFORMANCE$. Some early attempts at measuring musical performance were of this segmented and analytical nature - such as the Watkins-Farnum Performance Scale (1942 and 1954) where a point was deducted for each error in a bar of music. Factors such as musicality, phrasing, intonation and tone quality were not considered.

Some researchers have used computers and electronic devices to try to obtain accurate measures of musical performance. For example in 1960 Gordon used an oscillograph to measure dynamic ranges in musical performances. In 1974, Peters used a mainframe computer to measure rhythm and pitch accuracy in performances and Conway and Niederjohn in 1987 used a digital sound spectrograph device with a microcomputer to provide graphic displays of frequency spectrums.

Moving away from a highly segmented approach is the facet-factorial approach used by Abeles (1973) cited in Zdinski (1991). Statements for categories such as tone, intonation were developed and used on a Likert scale. These were used to evaluate 100 performances; factor analysis was performed and six factors resulted: interpretation, intonation, rhythmic continuity, tempo, articulation and tone. From these, a scale was developed and used by three groups of judges in a simulated performance situation. Inter-judge reliability was found to be high. According to Zdinski (1991, 52) 'performance criteria seem to have been selected that produced valid as well as reliable adjudication results'.

Mills (1991: 173) put forward a convincing case for a holistic approach. 'As a holistic assessor I feel that I am considering the performance in its own terms... Holistic assessment feels musical, to the extent that assigning a single mark or grade to a performance could ever feel musical'. A holistic approach is more natural in that it is the way we would assess a performance at a concert. If we had to justify our overall impression we might start to discuss 'segments', such as rhythmic drive. Mills undertook a study which supported her belief that holistic assessment may be more reliable because we are more practised at it.

Zerull (1990: 20), referring to Eisner, reminded us of the importance of the context and process when planning evaluation in the arts. 'Arts education pays a price when knowing is defined only in terms of facts and quantifiable behaviours'. He also reminded us of Howard Gardner's approach which monitored production, perception and reflection. Perception and reflection were recognised as a part of artistic activity. In relation to proposals for statewide assessment of the arts in the US., Zerull (1990: 24) saw a challenge for arts educators to develop an assessment tool that would 'convincingly demonstrate that learning was taking place in the arts classroom, support the notion that

knowledge is made up of more than facts, and most important of all, contribute to the artistic growth and sensitivities of the students' This challenge should be borne in mind in our test development endeavours.

Particular Concerns Relating to Evaluation of the MEK:

As a result of evaluating the ACER and University of Melbourne Music Evaluation Kit (the MEK) in the mid 1970s, we were aware of some particular concerns. In an attempt to address the problem of possibly incidentally measuring reading ability when the main intention was to test musical skills, we had read the questions aloud on the test as well as having them in printed form. This procedure was tedious for quick readers who were held back because a whole class had to do the test together as there was a single sound source - the cassette tape. A computer interactive test would enable students to work at their own pace as each would work at an individual machine.

The MEK was criticised for using up a lot of paper. To keep the selling price down test kits were sold with masters of the question and answer sheets that were then photocopied by schools in the numbers needed. This meant that school music budgets still paid for the duplication of the masters. The test was designed so that students marked their answers on the same sheet as the questions. This was to simplify the answering procedure for students, but it did mean that each administration of the test required a lot of paper. These days we are aware that it is detrimental to the environment to use a lot of paper, quite apart from the cost factor. With a computer interactive music test no paper will be needed.

The MEK was thought to be time consuming to administer. A computer interactive format will allow for a great deal more flexibility. With automatic scoring, it will also cut down dramatically on correction and reporting time. Students could receive immediate feedback (if desired) and a report of each student's results could be generated by the program.

As a result of reflecting on some of the musical measurement literature and experiences with the MEK, it would be desirable for the proposed test to meet the following ideals:

- a concern with the 'real stuff' of music rather than being limited to what is easy to measure;
- an avoidance of relying on students' understanding of words;
- an attempt to be 'holistic' rather than 'segmented';
- an awareness of environmental concerns (not using paper);
- an approach that is 'user friendly' and enjoyable;
- a design that is efficient in administration including provision for correction and reporting of results.

Initial Steps in Planning:

Having decided to explore the possibility of developing a computer interactive music test there are five closely interrelated areas to be explored.

1. Purpose of the Test

What will be the purpose of the test? Who will use it? Is it appropriate to be norm-referenced or criterion-referenced? There are occasions when ranking and selection of

students is necessary - such as selection into special music schools, auditioning for orchestral positions - basically competitive situations. Thus, do we want the test to provide a spread of scores? Or is the test to measure the extent to which students have achieved particular learning goals - a situation where it would be acceptable for all students to obtain maximum scores? Will the test have a diagnostic purpose? If so, to what curriculum area will it relate? Will it have a self-assessment/monitoring function?

2. Basic Framework for the Test

Will the test be tied to an existing framework? For example, will it be an updated version of an existing test, such as the MEK or an AMEB syllabus area? Will it be closely related to the National Profile for the Arts? Is it more appropriate to undertake a survey of needs in a particular area, such as secondary school music?

Outcomes from 1 and 2 above will also provide decisions regarding whether the test should be developed for classroom use or whether it is more likely to be administered on an individual basis, such as in a private music studio. These outcomes will also suggest the likely age range of people who would undertake the test.

3. Environment of User Resources

It would be pointless to develop a test which, due to sophisticated equipment, could not be accessed by the people for whom it was designed. It is, therefore, essential to use only basic computer hardware for operation but it is equally important to ensure that the quality of musical production is not compromised. What is 'basic' in the area for which the test is to be designed? This will necessitate a survey of schools (if the test will be used in schools) or private studios (if private teachers will be the main users) to find out what equipment is considered to be standard and what equipment may be obtained over the next couple of years.

Information about available hardware may impact upon the kind of software used for test development and the way in which the test is distributed.

4. The Market Niche

Related to the hardware and software used is the need to estimate how many genuine users exist. People are likely to be favourable and encouraging about a new development up to the point where they have to pay for it. This is the real test of the need for a product. If the test is designed for school use, how much are schools (or private music teachers) prepared to pay for it? What is a reasonable price for such a test? This will reflect on the sophistication of the final product. A fairly clear idea of the possible selling price is needed before a lot of work can be put into development.

5. Resource and Policy Decisions

The test would be marketed by ACER so there may be constraints relating to ACER policy. On the whole the test would be expected to have broad usage rather than being aimed at a minority group (such as advanced harp players). There are constraints relating to availability of time and professional expertise which need to be considered.

Steps taken so far:

In order to demonstrate what a computer interactive music test might be like, we have developed a model based on items from the MEK. It has the following features:

- multiple choice questions
- graphics, notation and printed questions appear on the computer screen
- students activate the sound stimuli (for each question) as they are needed
- students can receive automatic feedback (if desired)
- a record of each student's responses will be stored and a report of results will be produced

This has been developed purely for demonstration purposes.

To gather some initial reactions to the idea of the test, we held a meeting with six music educators from secondary schools, universities and the AMEB. We demonstrated the model and sought general comments on the feasibility of a music test in this format. The meeting was most helpful in directing our thinking and stressing the need to define the purpose of the test before proceeding further.

We are now undertaking a preliminary survey of secondary school music teachers to ascertain:

- the computer resources (hardware and software) typically available for music education in secondary schools
- the curriculum areas that music teachers believe would benefit most from a computer interactive music test

The survey has not yet been completed, but at this stage, tentative results (from 19 per cent of the sample) indicate:

- almost equal preference for IBM compatible or Macintosh computers
- all schools used a MIDI interface set-up
- less than half of the schools had access to CD ROM drive
- all teachers except one (who was unfamiliar with it) favoured using the MEK as a basis for a computer interactive music test, about half suggested additional areas that could be included

In conclusion we hope that, as a result of this project, we will develop a test that is genuinely musical and genuinely useful, meeting as many of the ideals outlined as practicable.

References

- Biggs, G.R. (1971). A suggested taxonomy of music for educators, *Journal of Research in Music Education*., 19 (2), 168-182.
- Brown, A. (1992). Development of computer technology in music. *Victorian Journal of Music Education*. No. 2, 3-8.
- Mills, J. (1991). Assessing musical performance musically. *Educational Studies*, 17 (2).
- Seashore, C. (1919). *The Psychology of Musical Talent*. Boston: Silver Burdett.
- Stevens, R. (1992). Using computer technology for music teaching and learning: An eclectic approach. *Victorian Journal of Music Education*, No. 2, 9-19.

- Zdinski, S. F. (1991). Measurement of solo instrumental music performance: A review of literature, *Council for Research in Music Education*, 109, 47-58.
- Zerull, D. S. (1990). Evaluation in arts education : Building and using effective assessment strategy. *Design for Arts in Education*, 92 (1), 19-24.

The writer would like to acknowledge the invaluable assistance of Margaret Wu in the preparation for presentation of this paper.

GENERATIVE PROCESSING IN THE ACQUISITION OF KEYBOARD PERFORMANCE SKILLS

Vanda Weidenbach, University of Western Sydney, Nepean.

Abstract

The emergence and proliferation of computer technology in the latter half of this century has caused educators in various disciplines to re-think the proposition of the teacher as the central focus in teaching and learning. There already exists a wide range of Computer Assisted Instruction (CAI) programs of the drill and practice type which facilitate the acquisition of theoretical musical knowledge, interactive programs which present and evaluate aural skills, and others which teach instrumental fingering for solo instruments and chords for guitar playing. Recent developments have produced more "intelligent" programs which can present a problem to be solved, record the reactions to and the solutions for the problem, suggest alternative solutions, and analyse the results of the user. Such programs are particularly appropriate for researchers interested in creative thinking processes in music as well as learning outcomes.

Another development, MIDI (musical instrument digital interface), which provides the link between small yet powerful computers and synthesiser- sequencers, is also having impact on music learning. Once considered aesthetically inferior to acoustic pianos, with their diversity of sounds and capacity to be programmed, are proving to be powerful tools in both individual and group keyboard learning. Connected to a computer, the synthesiser can provide an accurate performance model, record student trials for immediate aural and visual feedback, and save the work for teacher analysis after the practice session. In addition, by allowing the student to change instrumental timbre and to provide orchestral accompaniments to the compositions or technical work being studied, they can provide motivation to enhance practice sessions.

This paper will report on a recent study of the development of performance skills in novice keyboard players within a micro-technology music laboratory, and the attitudes of students to the technology.

This study on the development of instrumental skills is concerned with keyboards which have a long history, a short version of which follows. Keyboard is both an old and new nomenclature. During the 18th century, keyboard referred to instruments other than the piano, such as organ, clavichord, spinet and harpsichord. In the early part of the twentieth it often meant "dummy" keyboards which were used in the classroom for group instruction. From the mid-twentieth century, with the development of the electric piano, although often used synonymously with piano, the term has gradually grown to mean only those instruments whose sounds are produced electronically.

Whilst it has been reported that between 1895 and 1912 in the USA, there were more pianos in homes than bath-tubs, today it is the keyboard whose figures are of interest. For example, in 1989 in the USA, keyboards out-sold pianos 27:1 (Crawford, 1991) and although exact figures are not available in Australia, the trend appears to be similar. Keyboards have become the contemporary instrument for the younger generation, and a study of how students learn to use them is appropriate at this time.

Historical Background To Piano Teaching

Traditionally, piano has been taught under conditions of individualised instruction, using an acoustic piano, with concert or recital performance as the primary goal. During the twentieth century, other goals emerged which changed this focus and necessitated a different approach to the training of piano teachers for different environments - classroom, private studio or both. Pedagogy which could be applied to individual learners as well as to small and large groups developed, and teachers came to appreciate the more divergent purposes for which piano experiences could be used, such as acquiring fundamental and functional music skills and knowledge.

Evidence of group piano teaching, albeit not in common practice, can be traced from the early 1800s in the USA. Piano manufacturing had began there early in the 19th century and as industrialisation improved the quality and durability of the instrument, it began to appear in private homes, creating a demand for tuition. Playing the piano ceased to be the prerogative of the virtuoso performer and piano teaching became a cottage industry. By the time Lowell Mason succeeded in having music included in the public school curriculum in 1838 in the USA (Mason himself was connected to a piano manufacturing firm), the piano had become a widely accessible musical instrument. (Hitchcock, 1969).

CAPTION: MID-19TH CENTURY SKETCH OF DAUMIER caricaturing parental pride for a child's piano lesson.
In Rainbow, 1989, 279.



Plate 1.

CAPTION: MID-19TH CENTURY SKETCH OF DAUMIER caricaturing parental pride for a child's piano lesson.

In Rainbow, 1989, 279.

In private practice, most piano teachers of the time were concerned with the preparation of individuals for concert performance, but some of the more enterprising introduced group teaching. In England, Johann Bernard Logier (Uszler, 1982) is recorded to have taught harmony as well as performance to between 30 and 40 students simultaneously, under group instructional methods. Fundamental to his group teaching was the Chiroplast, a mechanical device invented by him in 1814 which fitted across the keyboard, holding the students hands and fingers between guides, ensuring correct wrist position. Teachers today would find his proposal for such large group teaching challenging, if not daunting, while the Chiroplast itself lost credibility as did other mechanical devices for piano playing.

CAPTION : A GERMAN MOUNTBANK blowing his own Trumpet at a Dutch concert of 50 Piano-fortes.
In Rainbow, 1990, 193.



Plate 2.

CAPTION : A GERMAN MOUNTBANK blowing his own Trumpet at a Dutch concert of 50 Piano-fortes.
In Rainbow, 1990, 193.

Introduction And Rationale For The Study

Economic pressures and shifts in philosophical attitudes are encouraging educators to re-appraise current teaching approaches and the role of the teacher. Some are seeking innovative means of providing students with skills and knowledge while others are recognising the need to encourage students to take greater control of their own learning. Various forms of new technology, in particular computer technology, offer opportunities for students to work independently. For the past twenty years, Computer Assisted Instruction in music has been explored and developed, and while programs for teaching a wide range of music skills have been effective, few have explored the potential of computers to teach performance practice skills. Technological issues are part of the current debate because until there is greater understanding of how students generate performance skills, and the critical variables of their learning identified, making affective use of the new technology is likely to be impeded.

Within the psychology of music literature, the majority of research has been devoted to "an analysis of the processes involved in listening to music" (Sloboda, v, 1988), that is, musical perception. Less attention has been given to generative processes even though music educators know from instrumental experiences with children that the impulse to generate and perform music is as natural as the desire to generate language. Several reasons for the dearth of studies in generative processing in musical performance have been suggested by Sloboda whose exploratory work in this field has major implications for music educators.

He suggests the main factors for this gap in knowledge fall under three headings; cultural bias, measurement problems, and problems of control. Contemporary Western art music has produced a gulf between performer and listener and, because there are far more listeners than performers, the focus in research has been on musical perception. Measurement problems in psychological science have contributed to the neglect as well. While some researchers have used electrical and computer means to record performance parameters in quantitative terms (Clarke, 1988; Gabrielson, 1988; Sundberg, 1988; Rasch, 1988;) and others have devised complex coding systems (Grunson; 1988) which facilitate statistical analysis, most studies tell us little about the processing which occurs before the actual realisation of the music. The third reason put forward by Sloboda is the difficulty in devising suitable experimental controls over generative behaviour without which it is difficult to make generalisations concerning results.

Beginning instrumentalists make up the greater proportion of students undertaking instrumental instruction and the majority discontinue before becoming competent performers. Investigation of the processes which facilitate instrumental skills acquisition appears therefore to be warranted and because of the lack of previous studies, investigating the behaviour of individuals to determine whether development is systematic and rule-governed, would seem to be important. One of the few related studies was undertaken by Grunson (1988) who appears to be the first to have investigated rehearsal or practice behaviour in a systematic, quantitative manner. It is well recognised that practice has a major effect on instrumental learning outcomes. Other pioneering works concerning what makes a performance musical have been reported but the subjects in these studies have generally not been beginners. There is a need to identify critical aspects of keyboard learning, not from the teacher's perspective but from that of the learner, and to determine the most effective means of using the technology to assist in these learning processes.

Although the piano lesson is one of the most enduring forms of tutorial teaching, and is still the preferred model for the contemporary private piano teacher, class piano also has a history dating back to the early 1800s. Despite this long history of keyboard teaching, little is known about how students learn to play the instrument and which of the strategies they adopt themselves are the most productive.

Research on the teaching of keyboard performance, primarily a 20th century phenomenon, has been directed to a diversity of topics. Issues related to teaching strategies, particularly the role of the "master teacher" have been prominent (Gordon, 1965; Machnek, 1966; Holland, 1973; Pucciani, 1979; Fang, 1978; Kern, 1984; Roberson, 1985). Technical manuals of instruction are also evident in the literature, although research relating to the teaching of technique is still exploratory with the most recent emphasis shifting from concern with the physical aspects of playing to a more global understanding of the psychophysical nature of performance (Wilson, 1986).

The development of instruction manuals, particularly those concerned with notation reading, have occupied considerable effort in terms of developing approaches related to this method of piano teaching. However, "despite the profusion and diversity of piano methods.....there is no scientific research into the relative effectiveness of these methods" (Uszler, 1992; p.587). It seems that the focus for much of the research on keyboard skills acquisition has been directed to the process of teaching rather than that of learning and until this area is explored, being able to make the most effective use of the new technologies will be hampered.

CAPTION : MONSIEUR JULES, a caricature of Jules Massenet.
In Larousse Encyclopedia of Music, 1971, 301.



Plate 3.

CAPTION : MONSIEUR JULES, a caricature of Jules Massenet.
In Larousse Encyclopedia of Music, 1971, 301.

In both the USA and Britain in the 1920s and 1930s, class piano instruction was a feature of music education for the primary school child. By the 1950s, the emergence of the electronic piano laboratory saw the establishment of group piano instruction in tertiary institutions throughout the USA, both for the purposes of teaching keyboard skills as well as harmony, aural training and the general development of musicianship. Class piano instruction in Australia was absent from early music education programs and appears only to have been taken up in the 1970s when electronic keyboard laboratory teaching was promoted by the Yamaha Corporation, and then only in tertiary institutions, initially.

CAPTION : MUSINKUNTERRICHT OHNE KEYBOARDS UND.....
In Enders, 1986, 108.



Plate 4.

CAPTION : MUSINKUNTERRICHT OHNE KEYBOARDS UND.....
In Enders, XXXX, 108.

However, it was the development in the latter 1970s and 1980s, during which time the expansion of technology through digital keyboards was made possible by MIDI (Musical Instrument Digital Interface), thereby enabling keyboards to be interfaced with computers, that the concept of independent learning became a possibility. Features of this development included; being able to provide drill and practice, keeping student records, and providing enhanced backgrounds.

Keyboard laboratories, in the past twenty years, have facilitated group instruction but it appears that instructors have yet to realise the full potential of the MIDI technology with its ability to interface keyboards with computers, thereby providing individualised instruction within a group teaching environment. Keyboard playing is most frequently taught through teacher modelling. The motivating power of the human model is a recurrent theme in learning theory and psychological literature, and many studies have reported on the importance of modelling while a smaller number have investigated the negative effect such modelling has, particularly in the "master-apprentice" environment.

The attachment of a sequencer/sound module, a development of the late 1980s to a MIDI keyboard has enabled students to access a musical model without teacher assistance. Having heard the model, the student can perform with the model, with or without an orchestral accompaniment. Simultaneously, the student's performance can be recorded for playback at which time auditory feedback on the accuracy of the performance is given. The recording can be replayed by the student, repeatedly if necessary, to compare his/her playing with that of the model. Depending on the level of self-analysis skills, the student can be provided with essential feedback on the melodic and rhythmic accuracy of the performance. Traditionally, such feedback has been in verbal form, given by the teacher during the lesson. To what extent the spoken word is more effective than the auditory model is unknown. Clearly, the provision of the audio model and the self-recording facilities of the sequencer ensure student access to immediate feedback whether working alone or within a group teaching environment.

Considerable emphasis in the past has been placed on the need for students to acquire music notation reading skills as they learn to play and until recently students were not actively encouraged to rely on the auditory model alone, that is to play by "ear". There appears to be little research which has sought to discover whether the visual cue is stronger than the auditory model or vice versa. Whether students, if given an auditory model, will concentrate on their listening skills alone to generate performance, use it as a supplementary aid to the written score, or not use the model at all, is to be discovered. It may be that the supplementary aural model will assist the student to acquire music reading skills at a faster rate. The collection of data, not of the outcomes but rather on students' perception of how the technology is used, may provide new insights into how they generate music performances.

Clearly, being able to sight read is a useful musical skill, particularly for instrumentalists, but it has been found that this insistence on musical literacy has been one of the reasons students discontinue their instrumental learning (Rees, 1978). Playing "by ear" which includes playing by memory has often been discouraged by teachers concerned that over-emphasis on the auditory sense will retard or diminish the development of sight reading skills, so students often hide this ability knowing it will be met with disapproval. Since most learning occurs through imitation, including musical technique and repertoire, there are ample examples of instrumentalists including keyboard players whose skills and musicianship have developed without the aid of traditional teaching and the ability to read

music notation, one cannot dismiss the importance of playing by ear. Teachers who dismiss such learning as unintelligent misunderstand the importance of kinaesthesia and the power of aural memory, both important components of Gardner's (1983) 'musical intelligence'.

By investigating how students use musical stimuli, discovering which they prefer and identifying that which enables them to learn most effectively, while maintaining their enthusiasm to continue, is to acknowledge the importance of individuality in music learning. This is of particular significance in a group learning environment. Given the state of music computer technology, such flexibility is possible.

**CAPTION : MUSIKUNTERRICHT MIT KEYBOARD KARIKATUREN
VON HANS JOACHIM DRAEGER.**

In Enders, 1986, 109.



Plate 5.

**CAPTION : MUSIKUNTERRICHT MIT KEYBOARD KARIKATUREN VON
HANS JOACHIM DRAEGER.**

In Enders, XXXX, 109.

A number of currently available piano tutors already have accompanying software, few of which has been evaluated, none from the student perspective. Until there are investigations into student attitudes towards Computer Based Music Instruction, how they use the materials, and how effective it is, proliferation of the technology will be restricted and music educators will be denied opportunities for innovative and appropriate application of the technology. In the past, there has been a concentration on learning outcomes as the primary measure of the success of C.A.I. In relation to keyboard playing, simply determining outcomes would not provide information on the process of learning, and it would fail to provide reasons for the drop-out rate of students who fail to progress beyond the preliminary stages of keyboard learning. An understanding of the generative processes which constitute keyboard performance and the identification of the critical components of the learning process are essential if this powerful technology is to be of value.

This study is part of a larger project. The subjects consisted of a group of second year students in the Bachelor of Education (Primary) whose only common music training was the preliminary 12 hours of music given as part of the Creative Arts 1 Subject in first year. Based on previous intakes of students, it was expected that the group would be diverse in their backgrounds which is the major justification for trying to facilitate opportunities for independent learning for such students.

Data were collected on musical background both in questionnaire form and by interview. Students were tested for basic musical knowledge and aural skills at the beginning of the semester, and given an attitude survey to complete during the semester. Interviews were conducted to give a broader picture of the students while they kept a diary themselves. Performance practice was recorded and saved to disc for analysis each week and for the final assessment.

Data of both qualitative and quantitative type have been collected to be analysed using ethnographic and statistical packages. NUDIST, SPSSX and STATVIEW are currently being used.

As expected, the students were found to be diverse in aptitude and attitude, prior musical experiences, and level of musical attainment, a not uncommon situation facing music educators involved in the training of primary school teachers. Levels of motivation as well as self-confidence were also disparate. Conclusions are beginning to emerge giving a profile of this population. Following are some of the general conclusions.

- 1 Students with prior instrumental skills, particularly keyboard, who have learned in conventional one-to-one environments, and who scored well on the aural skills test, appear to be less motivated by the technology than the other students.
- 2 Students who perceived themselves to have a high level of incoming music skills showed a negative correlation with the perceived benefits of the technology. They also preferred to learn without teacher assistance.
- 3 Students who entered the course with few musical skills and knowledge; and acquired greater confidence in their musical ability; perceived the computer to have helped them play more accurately; and believed they gained valuable classroom music skills through learning keyboard.
- 4 Students who supported the teaching of music by the classroom teacher and had enrolled to improve their music teaching skills, said they benefited from using the technology.

The teaching of music of the K-6 Music Curriculum in New South Wales is mandatory for all teachers entering the primary education environment. Students entering tertiary pre-service training exhibit a wide variety of music skills and knowledge and, for the short time they are involved in music subjects, the emphasis is to ensure every student has foundation knowledge on the philosophy, psychology, and practical knowledge and application of music suitable for the primary classroom.

There is a need for further understanding of how novice instrumentalists engage in learning and practice so that the time allocated to music is maximised. In all subjects, independent learning is considered essential, and music educators are challenged to identify the most efficient means of providing learning environments which will facilitate learning even in practical aspects of musical performance. Technology of various types is available to assist both teachers in their teaching and students in their learning and it behoves music educators to harness whatever means are at their disposal to create environments for learning which demonstrate "best practice" in music education.

References

- Clarke, E.F. (1988). Generative principles in music performance. (1-26). In J.A. Sloboda (Ed.). *Generative Processes in Music*. Oxford: Clarendon Press.
- Crawford, D. (1991). Computers and music studies today. *Library Hi Tech*, 33, 9, 1, 35-41.
- Enders, B. (1986). Das elektronische Tasteninstrument in der musiktheoretischen und musikpraktischen Hochschulausbildung. *Musik Und Bildung*, XVIII, 2, 106-113.
- Fang, S. (1978). Clara Schumann as teacher. Unpublished doctoral dissertation, University of Illinois, Urbana. In Uszler, M. (1992). *Research on the teaching of keyboard music*. In Colwell, R. (Ed.) *Handbook of Research on Music Teaching and Learning*. New York: Schirmer, Macmillan.
- Hitchcock, H.W. (1969). *Music in the United States: A Historical Introduction*. Englewood Cliffs, New Jersey: Prentice-Hall.
- Gabrielson, A. (1988). Timing in music performance and its relation to music experience. (27-52). In Sloboda, J.A. (Ed.). *Generative Processes in Music*. Oxford: Clarendon Press.
- Gardner, H. (1983). *Frames of Mind*. London: Heinemann.
- Gordon, S.L. (1965). Cecile Staub Genhart: Her biography and concepts of piano playing. Unpublished doctoral dissertation, Eastman School of Music, University of Rochester, Rochester. In Uszler, M. (1992). *Research on the teaching of keyboard music*. In R. Colwell (Ed.) *Handbook of Research on Music Teaching and Learning*. New York: Schirmer, Macmillan.
- Grunson, L.M. (1988). Rehearsal skill and musical competence: Does practice make perfect? (91-112) In Sloboda, J.A. (Ed.). *Generative Processes in Music*. Oxford: Clarendon Press.
- Hindley, G. (Ed.) (1971). *Larousse Encyclopedia of Music*. Lon: Hamblyn
- Holland, J. (1973). Chopin's teaching and his students. Unpublished doctoral dissertation, University of North Carolina, Chapel Hill. In Uszler, M. (1992).

- Research on the teaching of keyboard music. In R. Colwell (Ed.) *Handbook of Research on Music Teaching and Learning*. New York: Schirmer, Macmillan.
- Kern, F.R. (1984). Frances Clark: The teacher and her contributions to piano pedagogy. Unpublished doctoral dissertation, University of Northern Colorado, Greeley. In Uszler, M. (1992). Research on the teaching of keyboard music. In Colwell, R. (Ed.) *Handbook of Research on Music Teaching and Learning*. New York: Schirmer, Macmillan.
- Machnek, E.J. (1966). The pedagogy of Franz Liszt. Unpublished doctoral dissertation. Northwestern University, Evanston. In Uszler, M. (1992). Research on the teaching of keyboard music. In Colwell, R. (Ed.) *Handbook of Research on Music Teaching and Learning*. New York: Schirmer, Macmillan.
- Pucciani, D. (1979). Olga Samaroff (1882-1948). American Musician and educator. Unpublished doctoral dissertation, New York University, New York. In Uszler, M. (1992). Research on the teaching of keyboard music. In Colwell, R. (Ed.) *Handbook of Research on Music Teaching and Learning*. New York: Schirmer, Macmillan.
- Rainbow, B. (1989). *Music in Educational Thought and Practice*. Wales: Boethius Press.
- Rainbow, B. (1990). Johann Bernhard Logier and the chiroprast controversy. *Musical Times*, 193-196.
- Rasch, R.A. (1988). Timing and synchronisation in ensemble performance. (70-90). In J.A. Sloboda (Ed.), *Generative Processes in Music*. Oxford: Clarendon Press.
- Rees, W. (1978). Why do children drop instrumental tuition? *Music in Education*, January.
- Roberson, S. (1985). *Lili Kraus: The person, the performer, and the teacher*. Unpublished doctoral dissertation, Norman: University of Oklahoma.
- Sloboda, J.A. (1988). *Generative Processes in Music: The Psychology of Performance, Improvisation, and Composition*. Oxford: Clarendon Press.
- Sundberg, J. (1988). Computer synthesis of music performance. (52-69). In Sloboda, J.A. (Ed.), *Generative Processes in Music*. Oxford: Clarendon Press.
- Uszler, M. (1982). The American beginning piano method, View and Viewpoint. Part 1. Roots and branches. *Piano Quarterly*, 120, Winter, 12-19.
- Uszler, M. (1992). Research on the teaching of keyboard music. In Colwell, R. (Ed.) *Handbook of Research on Music Teaching and Learning*. New York: Schirmer, Macmillan.
- Uszler, M., Gordon, S., & Mach, E. (1991). *The Well-tempered Keyboard Teacher*. New York: Schirmer, Macmillan.
- Wilson, F.R. (1986). *Tone Deaf and all Thumbs?* New York: Viking penguin.

THE NATIONAL ARTS CURRICULUM: THE NEXT THREE YEARS

Joan Livermore, Faculty of Education, University of Canberra

Abstract

The Arts Statements and Profiles are now in the hands of the states and territories for development and refinement. Plans are underway for a National Professional Development Program to support the implementation of the national education agenda and DEET is encouraging the major stakeholders to form strategic partnerships to deliver the program. The current state of negotiations between teacher associations, universities and departments of education will be discussed and the perceived professional needs of music teachers will be considered.

After a period of development and documentation, the Curriculum Statements and Profiles for Australian schools are now in the hands of the states and territories where, to varying degrees, they are being matched against local requirements and new documents written which bring together state and national priorities. The national documents are recognised as 'working documents' and will, over the next three years, be developed and refined. To assist in their development and implementation, the Department of Employment, Education and Training (DEET) is establishing an extensive funding program in an attempt to bring together all major stakeholders in Australian education to collaborate in this work.

National Professional Development Program (NPDP)

The National Professional Development Program (NPDP) is a DEET program that will provide \$60 million over three years to enhance professional development activities for teaching staff in Australian schools. The main objectives of the NPDP are to:

- * facilitate the use of the Curriculum Statements and Profiles for Australian schools and the Key Competencies and the teaching of accredited vocational education courses in schools;
- * assist the renewal of teachers' discipline knowledge and teaching skills and help teachers to improve work organisation practices and teaching competencies within schools;
- * enhance the professional culture of teachers and encourage teacher organisations to take a higher profile in promoting professional development of teachers; and
- * promote partnerships between education authorities, teacher organisations and universities in the provision of professional development opportunities for teachers.

Under the Strategic Initiatives Element of the program, the National Affiliation of Arts Educators (NAAE) will receive \$80,000 - \$100,000 in 1993 (and it is hoped/expected also in the subsequent two years) for the purpose of coordinating NPDP projects in the arts. This will involve

- * administration and facilitation of projects,
- * publication and dissemination of reports and newsletters,
- * collection of exemplars,
- * setting up a national database of resources: texts, tapes, videos and materials, names of practising artists and other experts.

Under the General Element of the program, allocation of funds will be based on submissions for specific projects. It is expected that pilot projects in selected schools / clusters of schools in 1994 will form the basis of expanded programs in 1995-96. Projects should be school based and be shown to answer the expressed needs of teachers. All projects must involve partnerships between government and non-government system authorities and independent sector authorities, universities, teacher organisations (the Australian Teaching Council, unions and professional associations) and Aboriginal Community Colleges. The NAAE is currently preparing a proposal under this element for projects in all art forms.

Closing date for funding for 1994 is 30 November 1993.

Key Competencies Programme

After a period of comparative quiet, the Key Competencies are again being promoted and undergoing further development, in conjunction with the Curriculum Statements and Profiles, but also on their own. A funded program will assist in their development and trialing.

The Key Competencies program is providing almost \$20 million over the next three years to support the development, trialing and evaluation of the key competencies in Australia's general and vocational education and training systems. Projects could include:

- * developing Cultural Understanding as a competence,
- * improving the language used to describe the key competencies, their performance levels and their performance level descriptors,
- * audits of the key competencies in existing curricula,
- * curriculum development to ensure that the key competencies are embedded in the most common patterns of study,
- * field testing implementation of the key competencies in school and training settings,
- * investigation of reporting possibilities.

The NAAE has been invited to develop a submission for funding. Applications close on 30 October 1993.

National Strategy for Equity in Schooling

Overarching the national education agenda is the National Strategy for Equity in Schooling. All education programs will be expected to address the priorities set out in the equity policy.

The draft strategy is now out for consultation. The targeted groups are:

- * students with disabilities and learning difficulties,
- * students at risk,
- * students from low socioeconomic status backgrounds or living in poverty,
- * aboriginal and Torres Strait Islander students,
- * students from non-English speaking backgrounds,
- * students who are geographically isolated,
- * gender,
- * multiple or intersecting disadvantage,
- * gifted and talented students,

The priorities for strategic action cover curriculum and assessment issues, quality of teaching, supportive school environment, awareness and commitment and optimal use of resources.

Peak Bodies and Alliances

Factors such as the restructuring within education, concern with the rapidity of change and with the directions these changes are taking, have generated the emergence of new peak bodies and alliances between educators in a range of contexts. The influence of professional associations in policy development is increasing, and these associations are now seen to have a major role in the delivery of professional development programs for teachers. The uncertain relationship between state and federal ministries of education places even more responsibility on the professional associations to ensure that the needs of teachers are met.

- * The **Australian Teaching Council (ATC)** will begin its operation in 1994. Its fundamental mission is to improve the quality of teaching in Australian schools, establish standards of professional conduct, provide professional development programs, and develop procedures for the recognition and registration of qualifications.
- * The **National Education Forum (NEF)** consists of representatives of professional associations in education. Membership covers all subject areas, teacher education faculties, parents bodies, unions and some education systems. Its profile is strengthening after two years of operation. It is recognised as a representative forum for discussing issues that go across the curriculum; it has a nominated delegate on the ATC; it will receive strategic funding from the NPDP to address cross curriculum issues. The NAAE represents the arts on this body.
- * The **Federation of Artists and Educators** (working title) is a new alliance between Australia Council, NAAE, Arts Training Australia and prominent practising artists. Its aim is to promote understanding of and support for arts education issues within the arts community. It particularly hopes to strengthen links between arts education and arts practice.
- * After four years of existence the **National Affiliation of Arts Educators (NAAE)** is firmly established as the combined voice for arts educators in Australia. It has a specifically national role and membership consists of two representatives from AIAE, ASME, ATOM, Ausdance, DECA and NADIE. It is currently setting up its corporate structure in order to administer programs under the national education agenda.

- * In the states and territories there is emerging a range of bodies combining various arts education associations. These bodies are not formally linked to the NAAE, but are valuable links in the state / national network.

The Future for Australian Music Education

The past five years have changed the face of arts education in Australia. On one hand, there have been substantial gains in having the arts designated as one of the key learning areas in the Australian curriculum, and this could only have been achieved through the strong collaboration between teachers across art forms. The arts in schools are gaining strength from the participation of arts teachers in the mainstream of consultation on education policy and their presence in major committees and forums. In schools, newly formed arts faculties are discovering benefits from collaboration between teachers of arts subjects, and their combined strength and mutual support are proving beneficial in advocacy for the arts curriculum area.

However, music educators are also aware that such gains have often been at the cost of losing the special identity of music in the school. In some cases, program time now has to be shared between all of the art forms, resulting in less face to face hours in the classroom and reductions in staffing. In situations where this has also been combined with a general restructuring and reduction in available resources, the effect has been devastating.

The inefficient manner in which many of the new educational initiatives have been handled by authorities (impossible time lines, ineffective consultation and arbitrary imposition of educational models) has resulted in policies and documents that are considered less than ideal by *all* teachers, not only those in music education. This dissatisfaction is recognised by the government, and it is hoped that the next three years will provide opportunities for thorough testing, refinement and development by teachers in the field. Music educators must take advantage of this opportunity to influence the future directions of Australian education and work energetically to oppose policies that are not appropriate to music education. No longer can teachers of music think within the confines of their own discipline area, nor can they afford to ignore political issues which previously touched them only lightly. To do this effectively, music educators must confront the reality of the effects of the fragmentation that exists in the multitudes of separate music bodies. This is a generic problem that threatens to permanently disempower music education in this country. The current level of public commentary, the quantity of published material, the degree of coordinated political advocacy at state, regional and school levels in no way reflects the size or the quality of music education in Australia.

The time has come for a radical reappraisal of our priorities for music education. Rather than focus on the shortcomings of the government processes and documents, we should pause to consider the effectiveness of our own involvement and commitment to music education as a whole. Most importantly we need to harness the combined expertise, the fine minds and the wealth of experience present in all of the contexts of music education as it is interpreted in its broadest sense. Over the next three years we have the prospect of establishing some solid infra-structural support through the project funding. I fervently hope that we will make the most productive use of the opportunities that such support will offer.

PANDORA IN THE 90's: REPRESENTATIONS OF THE LULU FIGURE

Maree Macmillan, Department of Arts Education, RMIT

Abstract

Tertiary arts educators are all too aware of the widespread conservatism currently unleashed in the name of market forces, with a minimum consideration for the human or the humane. While the necessity to engage with politics and economics is indisputable, our integrity as artists and intellectuals demands much more than mere pragmatism. If our survival is to be more than Pyrrhic, we must draw strength from the very heart of our discipline by calling on the depth of our cultural heritage.

It is perhaps particularly apt in the current climate that my concern is to explore the myth of Pandora, whose box has come to denote any source of multiple disaster. This myth has been represented over the centuries in various text forms and art works; the most familiar of these to musicians is Alban Berg's Lulu. My exploration will draw on feminist psychoanalytic theory and semiotics, developed by the avant-garde over the last twenty years around the psyche and representation.

It is of grave concern that the mythology depicting femininity, the female body and female sexuality as enigmatic and dangerous is still extremely influential in present entrenched and pervasive aspects of modern consciousness.

Introduction

In my current research, I am exploring the representation of the Lulu figure across different text forms, looking particularly at Pabst's 1928 German silent film *Pandora's Box* and Berg's opera *Lulu*, the composition of which commenced in the same year and remained incomplete at the time of Berg's death in 1935. Both of these derive from the turn of the century plays *Earth Spirit* and *Pandora's Box* by German playwright Frank Wedekind; these plays take their original inspiration from the ancient Greek myth of Pandora. As this paper reports on research in progress, it raises questions and outlines directions rather than offers solutions.

Why, may you ask, is a music educator spending time doing this in the present climate of economic rationalism? It is of course necessary to engage with pressing political and economic contingencies if we are to survive at all, but to do only this would be short-sighted; if we lose the revolutionary aspect of the arts, we lose part of their inherent value and integrity, so that what survives may not be worth having. It is my belief that as part of maintaining our radical challenge in this climate of widespread conservatism, it is particularly vital that music educators draw on the breadth and depth of the cultural and historical context to which we contribute.

I see it as important to address not only the specifically musical and pedagogical issues of our teaching, but also the political and cultural meanings and messages which we overtly and covertly transmit and perpetuate. Rather than being buffeted by current contingencies, we can challenge these trends; by putting them in a broader perspective and examining their deeper meaning, we can attempt to understand and shape historical and cultural evolution.

I propose to look at Lulu not just as an interesting woman in opera, which would perhaps be understandable as a legitimate, if rather backward-looking project for a feminist musicologist, but as a figure who has almost archetypal significance, and hence, a relevance which transcends time. The Pandora myth on which the Lulu figure is based embodies representations of femininity and female sexuality which are still

deeply embedded in our culture. Since her mythical inception as the first woman in ancient Greece, the Pandora / Lulu figure has appeared in various textual and artistic manifestations, continuing to do so to the present day. The pervasiveness and fascination of the myth are symptomatic of how deeply it has taken root in the cultural unconscious of Western society.

Musicological Precedent

In drawing on broader cultural and historical thinking, I have a venerable predecessor in musicologist Treitler (1989), who, not co-incidentally, also discussed Lulu and her forbears in relation to his approach. In the introduction to his book Treitler stressed the 'presentness' of music, its immediate power to move the human spirit as important to his musicological method. He saw the meaning of a musical text as extending beyond its boundaries, a creation of the responses of all those engaging with it in their respective 'presents' from the moment of its composition to the present time.

Treitler decried the long Western philosophical tradition of embedding knowledge in a mythology in which objectivity and reason on the one hand, and subjectivity and sensuality on the other, were mutually opposed. Within this tradition, knowing is separated from feelings and imagination, creating a duality which is characterised as masculine and feminine, respectively. He advocated adopting a model of knowing which entailed an involvement of the knower with the known, as in knowing 'by heart'. While acknowledging the need for liberation of the 'feminine' mode, he suggested that

perhaps it is time to take the still more radical step of purging our conception about understanding of the ancient and harmful idea that (knowing) has two modes, and of their underlying identification as genderized epistemological styles. (Treitler 1989: 17-18)

Many contemporary feminists also embrace a path of unification which transcends the definition of 'feminine' in terms of opposition to a 'masculine' norm; they aim to achieve a knowing that engages both sense and sensibility. Treitler suggests that this can be accomplished by paying attention to strong historical and psychological forces in our culture that favour the development of a divided consciousness, thereby exposing them for what they are: rationalisations of a gendered status quo.

As an example of this, he draws attention to the Alexandrian Jew Philo's retelling of the Genesis story in terms of the fall of man as the fall of reason; the agent of this fall is sensuality, embodied as woman. The feminine is thereby enshrined as both dangerous and inferior. The Pandora figure, from whom Lulu is derived, is cast in the same mould; like Eve, she unleashes evil on the world through her desire for knowledge. It is important to deconstruct such mythology if its insidious effects are to be challenged.

I propose to do this by investigating the manifestations of a myth which is so pervasive that it works not only at the conscious level, but has invaded the very unconscious of Western cultural heritage: the myth of Pandora's box.

Methodology

In my research I am examining how two representations of the Pandora / Lulu figure, in the opera *Lulu* and film *Pandora's Box*, derive from and illuminate the myth through their different text forms. As both film and opera involve a large component of the non-verbal, exploration of meaning-making beyond inherently verbal, traditional psychoanalytic narrative is invited. By employing interdisciplinary critical tools from within a feminist framework, I elucidate the contribution of each text to the

perpetuation of the myth and its continuing impact on the cultural unconscious, particularly with regard to notions of femininity and female sexuality.

I also consider the effect of historical and social context on readings of these representations of the Lulu figure, for example, the effect of attitudes to women at the time. The pre-Nazi setting in which both of these works were conceived provides interesting parallels with our own more recent history and hence is potentially the source of useful insights into the current climate. Deconstruction from within a feminist framework promotes the possibility of new and productive readings, questioning notions of masculine and feminine and their inter-relationship, both in artistic practice and in Western culture as a whole.

It is not possible here to give a detailed account of my investigation of the film and the opera, so I will simply situate my enquiry and indicate some of the questions it will raise. Let us first consider briefly the myth itself.

The Pandora Myth

The icon of Pandora is enshrined in our very language. The expression 'Pandora's box' keeps Pandora's image constantly before us: the phrase is idiomatic to most European languages, denoting any source of multiple disaster. Its use in this way continually reinscribes, at least at the symbolic and sub-conscious level, the idea of femininity and female sexuality as alluring but also dangerous, uncontrolled and chaotic, the source of all the world's ills.

To refresh your memory about the Greek myth: according to the version that we have inherited, Pandora, the first woman that ever lived, was made from clay, inspired with life and bestowed with every gift, hence her name. While married to Epimetheus, brother of Prometheus, she opened a fateful box which released on the world all the evils and vices which have since afflicted it; hope alone remained at the bottom of the box to assuage the lot of humanity.

When compared with 'woman' in classic narrative structure, Pandora is uncharacteristically active; she is the agent propelling the narrative, linking sexuality and knowledge through her active curiosity. This connection still finds resonances in current attitudes to and definitions of knowledge, although the active principle is generally assumed to be masculine. As the myth was handed down, it assumed a significantly different form. Rather than being the active seeker of knowledge, woman herself became the secret, the unknown; she, and in particular, her sexuality represented by the box, became the enigma. Pandora was therefore the first *femme fatale*, or 'beautiful evil', although not labelled as such until the 19th century.

Pandora parallels the more familiar Eve, who like Pandora, is held responsible for 'the fall of man'. Less familiar is Eve's Jewish variant Lilith, whose name and nature provide a possible link to the name Lulu. The likelihood of this connection is reinforced by several similarities with Pandora: Lilith was also fashioned out of clay; she, too displayed independence of spirit, objecting to Adam's attempts to sub-ordinate her sexuality and leaving when he tried to compel her by force to 'lie beneath him'; Lilith's sensuality, passion and independence were turned into qualities of evil, whereby she seduced and preyed upon men in their sleep to propagate legions of demons.

Manifestations Of The Myth In Pre-Nazi Europe

Two particularly striking manifestations of the Pandora / Lulu figure are Berg's *Lulu* and Pabst's *Pandora's Box*. These works appeared in the wake of the *femme fatale*'s emergence as a central figure in late 19th century symbolist art and literature. Mary

Ann Doane (1991) remarked in *Femmes Fatales* that this emergence marked the confluence of modernity, urbanisation, Freudian psychoanalysis and new technologies of production and reproduction born of the Industrial Revolution.

Doane noted that this pre-Nazi era also brought shifts in understandings of sexual difference, prompting fears and anxieties: in the alienation of machines, the male seemed to lose access to the body, whereas the woman came to over represent it; the feminine body was allegorised and mythified as excess in art, literature, philosophy (and music).

The Pandora / Lulu figure epitomises the view of the female as dangerous sexual excess and thus its representations must be the subject of feminist critique if modern thought is to be prevented from being unconsciously imbued with such ideas. I will outline briefly some of the issues I intend to explore more fully in my thesis.

Feminist Approaches

Film

Feminist film theory raises questions about the role of cinematic apparatus itself, the 'technology of the visible' in constructing image, particularly woman as image, and in orchestrating the gaze of the viewer. In doing so, it engages with the area of the visual signification of consciousness and the construction of subjectivity, taking it into the realms of psychoanalysis to decipher the psychical operations of the cinema and its impact upon the spectator, particularly in the realm of fantasy and desire. It can be readily appreciated how these concerns are vital to decoding the representation of the Lulu figure. That in Pabst's film she is constructed quite differently from in the opera, is partly because of the nature of the medium itself.

Music

The newly emerging field of feminist musicology draws on feminist discourse in film, literature, art and philosophy. Questions arise as to how constructions of 'masculinity' and 'femininity' are encoded in sound and, in the light of Leo Treitler's approach, how musical meanings change with the ideological perspective and historical context of the audience. One might ask how far is music itself coded as feminine, even as *femme fatale*.

Although music can be seen at times to have its own narrative structure, and therefore be subject to the gendered limitations of classic patriarchal narrative, in which woman or the feminine is constructed as an obstacle to be overcome, its non-verbal, emotional and intuitive dimension may allow the exploration of other areas which are less directly complicit in this. Potentially subversive elements may be unearthed, leading towards the celebration of the intuitive, of other ways of being, an affirmation of some aspects of the chaotic, a revaluation of Pandora.

In opera, the relationship between the analytical and intuitive, the intellectual and the sensual aspects of musical and dramatic signification are vital in constructing both the characters and the audience. The verbal narrative of the libretto combines with the non-verbal, emotional and intuitive dimension of music. Brecht saw its aims as illusion and sensual satisfaction, the creation of an emotional involvement, an identity precluding moral judgements.

Berg's Lulu

The perceived dichotomy between so-called masculine 'pure reason' and 'feminine' sensuality finds interesting expression in Berg, particularly in his later work. On the 'masculine' side is his meticulous, almost obsessional attention to structure; on the

'feminine' is the powerful sensual involvement of his extremely dramatic and emotional music. In *Lulu*, on which he was working at the time of his death, both aspects reached their zenith. As this opera is arguably the last major work of the so-called German canon, its deconstruction from within a feminist framework is additionally significant.

As well as a controlled use of cyclical and symmetrical forms on both the large and small scale, the melodic, harmonic and rhythmic elements are all carefully calculated. Berg employed his own personal codes based on his initials and those of his idol, Hanna Fuchs-Robettin, his numerological beliefs, and the interconnection between the two. All these formal determinants are themselves set within the framework of Berg's twelve-tone technique, which carries its own inherent structures and limitations.

Many questions arise as to the place of the intuitive and emotional in such an ordered universe. One possibility, as some commentators have argued, is that this very structure is used to make powerful emotional and dramatic points. Another view is that, in direct contradiction to Brecht's belief, Berg actually relies on emotion to carry his argument; this suggests the possibility of interesting connections with 'women's ways of knowing'. Both views point to the strong presence of so-called masculine and feminine elements, whose inter-relationship poses many questions about the representation of Lulu and the interpretation of the opera. One of the most important of these concerns how far Berg's rows, symmetrical structures and numerology are confining, or whether they provide a frame within which emotions or excess can still be expressed.

As he did not live to complete the work, Berg has sometimes been described as Lulu's last victim. It could be asked whether his obsessive preoccupation with form was his desperate attempt to control the chaos of female sexuality, of the feminine, of the world in general. His desire for control sits rather paradoxically with his concern with fate. Given his interest in numerology, the structural frame, underlined by the ever-present fate rhythm, could be seen as an expression of his fatalism, his own attempt to command fate on a small scale by pre-determining the fate of the characters in the opera.

This raises the crucial question of how far Lulu is framed, as she is even more literally by the cinematic apparatus. It is vital to the interpretation of Lulu as a character and her effect as a representational figure how much room she has to move and to move us. Lulu is an enigma, a mythical, chameleonic spirit who takes on many guises: Pandora, Eve, Lilith, Pierrot, Medea. On the one hand, she appears as the almost unwitting a victim of the inexorable workings of a patriarchal world, a mere vehicle, sexual currency to be exploited; on the other, she appears cold and predatory, the amoral seducer, the propagator of evil. This is the classic paradox embodied by the *femme fatale*.

One wonders whether music itself is being constructed as *femme fatale* in that the body parts of Lulu are described in musical terms. There are also self-referential and caricature elements in *Lulu* which imply criticism of conventional opera: it is an opera about writing an opera, with a plot that even the characters find difficult to believe. One reading is that music, woman and opera are all being presented as the irrational feminine, needing structures to control, contain, frame their sensual / sexual excess. Such fundamental questions have an abiding significance reaching far beyond this particular opera. The interrogation of the nature of woman, femininity and female sexuality is one of the continuing preoccupations raised by the Lulu / Pandora figure today.

Lulu / Pandora Today

The pre-Nazi Viennese opera and Berlin film were conceived in an era which in some ways prefigures our own and hence may provide fruitful reflection upon both present

cultural signification and historical context, helping us shape future directions. The scholarly trends of today's intellectual climate derive very much from the various aftermaths of Modernism and its historical setting in pre-Nazi Europe. Influential feminist film theorist Laura Mulvey points to parallels between the transition from the 1920s to the '30s and from the 1970s to the '80s. *Lulu* and *Pandora's Box* date from a time of many radical art movements which on the whole failed to survive fascism. It is instructive that Serialism was banned by the Nazis as anti-nationalist.

The subsequent post-war enforcement of traditional, conservative values ensured that it was several decades before similar visionary trends re-emerged in the idealism of the late '60s through the '70s. It is a concern that the transition to the utilitarianism of the '80s and our present economic direction is increasingly displaying fascist tendencies, in that the human and humane are sacrificed in the service of the dollar and technology. The growing strength of neo-Nazism and of virtually unregulated bio-genetics is no surprise in this climate.

We are at present witnessing an increasing tendency toward specialisation and individualism, leading to fragmentation, insularity and positivism. In our focus on technical applications and so-called quality assurance, it is easy to lose sight of the broader picture of why we are doing things and what we truly value. The idealism, self-expression and civilising influence of an ethically aware and radical artistic practice are more vital than ever before; vision and perspective are essential in stemming the tide of blind self-destruction.

Examination of works of a preceding era may well be instructive for artistic practice in the '90s. I argue, with Laura Mulvey, that it is time to rediscover and redeploy the aesthetic strategies and theories of the feminist avant-garde, towards creating a more positive integration of 'femininity' and female sexuality in Western culture. It is time for a new look at Pandora, a reassessment of the myth and of the representations of Pandora's box.

Conclusion

Rather than dismissing the non-rational as chaotic, we need to dispel the fear of anything that is different, non-ordered, non-masculine. Otherwise these forces are projected on to the world in a destructive way and often labelled as feminine, even in blatantly inappropriate cases; for example, Max Beckmann's painting of the atomic bomb is entitled *Pandora's Box*.

We need to reclaim and revalue the intuitive, the sensual, the non-linear in the interests of the well-being of our cultural development and the survival of our humanity. This need is now openly recognised even in science: for example, the 'masculine' and 'feminine' of the Pandora myth come together in the very name Chaos Theory. Music is an equally powerful social force; in re-examining its impact as a discourse, music educators contribute to radically interpreting and re-shaping the world.

References

- Bade, P. (1979). *Femmes Fatale: Images of evil and fascinating women*. New York: Mayflower Books.
- Clement, C. (1989). *Opera, or the Undoing of Women*. London: Virago Press. .
- Dijkstra, B. (1986). *Idols of Perversity: Fantasies of Feminine Evil in Fin-de-Siecle, Culture*. Oxford University Press.
- Doane, M. (1991). *Femmes Fatales*. New York and London: Routledge.

- Hazelton, L. (1977). *Israeli Women: The Reality Behind the Myths*. New York: Simon and Schuster.
- Jarman, D. (1991). *Alban Berg: Lulu*. Cambridge, U.K. Cambridge University Press,
- McClary, S. (1991). *Feminine Endings*. University of Minnesota Press, Minnesota and Oxford.
- Mulvey, L. (1989). *Visual and Other Pleasures*. London: Macmillan.
- Panofsky, Dora & Erwin. (1962). *Pandora's Box*. New York: Bollingen Foundation.
- Perle, G. (1989). *The Opera of Alban Berg: volume two/Lulu*. University of California Press, Berkeley, Los Angeles, London.
- Treitler, L. (1989). *Music and the Historical Imagination*. London: Harvard University Press.

MATHS AND MUSIC : A CREATIVE PARTNERSHIP A PARTNERSHIP APPROACH TO THE TEACHING OF THE KEY LEARNING AREAS.

Deirdre Russell-Bowie and Noel Geoghegan, University of Western Sydney, Macarthur

Abstract

Over the last thirty years research into the arts in education, at both a national and state level, has clearly indicated that teachers in general give the arts relatively low priority. One suggested solution is to integrate the arts with other Key Learning Areas (KLAs) which have a higher priority.

The new Bachelor of Teaching Course developed at the University of Western Sydney, Macarthur, offers students the opportunity to learn about the Key Learning Areas through a unique integrated approach. Each curriculum Studies unit combines two Key Learning Areas, eg Maths and the Creative Arts. In Curriculum Studies 4 students undertake integrated learning experiences involving Mathematics, Visual Arts, Drama and Music. In planning the subject, staff have identified six Big Ideas which have concepts in common across the two Key Learning Areas. Concepts relating to these Big Ideas are integrated and developed across maths, music and the visual arts through out the semester. At the same time students are preparing an integrated drama production which they present to children at the end of the semester and which shows the practical application and integration of mathematical concepts, musical performance and visual arts skills. This paper reports on the development of this subject and the student outcomes and responses in relation to the subject in general and to the music strand in particular.

For many years now research into the arts in education have indicated that teachers in general give the arts relatively low priority, especially in comparison to the sciences¹. In one form or another the arts subjects have always been included in Australian education. However up to the 1950s it was only in the pre-schools that the creative arts had a central place in the school curriculum. A report of the Federal Taskforce on Education and the Arts to the Minister for Education and Youth Affairs comments : 'The idea that children should be given materials, stimulation and assistance and left to make their own discoveries was in marked contrast to the formal methods used in other disciplines where steady progress by a whole class through a set syllabus was the common pattern.'².

However, even though the emphasis on creativity increased, by the early 1970s arts education as a whole was still a largely neglected area of study. In 1974 *Arts in Schools* NSW report the committee arrived at the following conclusions:

- a. We consider that the arts are indispensable in the education of children and that participation in arts activities should occupy a significant proportion of school time. Furthermore, we believe that teaching must be competent and that all necessary accommodation, equipment and materials should be readily available; and
- b. In general the status of the arts in NSW Government schools is not yet commensurate with their educational significance.³

In primary schools, arts subjects were still sometimes taught by teachers untrained in the arts, arts education was accorded a minor place in most educational institutions and even within the arts, there was a hierarchical order of subject importance, with visual arts, craft and music having highest priority, drama not being regarded as a subject in its own right and dance and/or movement being omitted from the curriculum apart from in the preschool setting.⁴

In 1977 a review of the arts in education was undertaken by the Schools Commission and the Australia Council, both at a state and national level. The results of this research indicated very similar findings to previous reports into arts in education, in that the state of the arts in schools was not taken seriously by many teachers and that their popularity was static or declining.⁵

This study also identified an urgent need to improve the status and teaching of the arts in Australia with the importance of specialist teachers in all schools being stressed and the need for teacher training in the arts to be improved, as many teachers felt they lacked confidence to teach the arts as a result of their background and the lack of adequate training in basic technical skills in their teacher training courses.⁶

This report appeared initially to give some impetus to the state of the arts in education in many states, but by 1985, in NSW, the recommendations were still being explored with financial restraints hampering progress. However new initiatives in arts education were being planned in the development of a curriculum covering the years from KG to Year 12.⁷

However, in a recent research project into the policy and practice of music education in NSW state primary schools⁸, results indicated that the situation for classroom music education does not seem to have changed significantly from twenty or more years ago. I'm sure that the same could be said for the other arts subjects. Music is still a subject which few teachers feel confident to teach and all the arts subjects have a low priority in primary schools. Since the Schools Renewal movement in the late 1980s, the arts are no longer viewed as separate discipline areas, rather they are all part of the Creative and Practical Arts Key Learning Area.⁹ The low priority given them in schools is reinforced by the priority given by the Ministry of Education in setting the Creative and Practical Arts syllabus as the last one of the six Key Learning Areas to be completed.

Most NSW universities have also followed the ministerial example by significantly decreasing the contact hours for all arts subjects and putting them together as one subject instead of treating them as separate discipline areas. In the light of past research discussed which indicated that teachers lacked confidence and skills in the arts and therefore did not teach these subjects effectively, this move does not augur well for the children of the future.

However, the challenge to train primary students teachers in the arts, despite the cut in contact hours, has been taken up by the University of Western Sydney, Macarthur in their new Bachelor of Teaching course. During the first and second years of the course students enrol in a series of Curriculum Studies which seek to integrate two Key Learning Areas in each subject; eg. Mathematics and the Creative and Practical Arts. One particular subject, (Curriculum Studies 4) in their second year, attempts to develop the understanding, attitudes and associated skills in Mathematics and the Creative and Practical Arts. Students are given opportunities to investigate the benefits of learning associated with Mathematics and the Creative and Practical Arts, such as positive attitudes, constructing meaning, and recognising that thinking involves creativity, intuitive thinking, pattern creation and recognition of relationships.¹⁰ These elements are common to Mathematics, Music, Drama and the Visual Arts.

Objectives for this subject include the following:
Students will:

- further develop positive attitudes and a desire to learn and teach mathematics and the creative and practical arts;
- see the potential which can be realised by integrating studies of space and measurement with the creative and practical arts both for themselves and for the children they will teach;
- observe and understand that three-dimensional design relates to the aims and content of the K-6 Visual Arts syllabus;
- experience how three-dimensional design can integrate across the curriculum, and specifically with mathematics;
- understand and appreciate how drama can integrate with other subject areas, specifically in visual arts, mathematics and music, and in so doing, further the creative and social growth in children.¹¹

As all the staff involved with this subject did not have the skills in all the arts and mathematical areas, students attended classes in visual arts, music and mathematics led by staff with expertise in these individual areas. The challenge was, how to integrate across the subjects in a relevant and meaningful way which could be used by the students in the classroom situation. So the concept of BIG IDEAS was developed. Six large concepts or 'big ideas' from the field of mathematics, which were perceived to form links with concepts to be found in the field of the Creative and Practical Arts, were decided upon and staff members from each discipline area brainstormed ideas relevant to each of these concepts from their own field of expertise. A sequence of activities and learning experiences which sought to show students how mathematical ideas could be found in the arts were developed and presented to students each week.

Big ideas and related activities included the following:

**Mathematics
INVESTIGATION**

- *Measurement
- *Estimation
- *Hands-on investigation - reflection
- *Spatial investigations
- *Classification
- *Volume

IMAGERY

- *2D shapes
- *How we see things
- *Construction of meaning
- *Imagination
- *Recognition and analysis
- *Puzzles

**Music
INVESTIGATION**

- *Investigating the raw materials of sound:
- *Voices, instruments and body percussion.
- *Improvisation and compositions
- *Problem Solving

IMAGERY

- *Music to poetry
- *Auditory awareness, discrimination, memory, sequencing and imagination;
- *Program music
- *Creativity

**Visual Arts
INVESTIGATION**

- *Investigating artists, eg. Jeannie Baker's collage work
- *Investigating things that float, glide and fly in the air
- *Kite-making

IMAGERY

- *Marbling - looking for images
- *How artists use imagery to create art works
- *Children using their imagination: through music; creating and responding to rhythm

REPRESENTATION

- *Graphing
- *Modelling & mapping
- *Representing 3D in 2D
- *Levels of thinking
- *Golden ratio
- *Maths trails

REPRESENTATION

- *Graphic symbols
- *Graphic scores
- *Rhythmic notation : reading and writing
- *Simple pitch notation
- *Music making and movement to represent stories, feelings, events, moods, etc.

REPRESENTATION

- *K-6 Visual Arts Syllabus
- *Representing the environment
- *Direct experience
- *Memory experience
- *Representing 3D and 2D
- *Creative packaging

REPETITION

- *Flip Slide Turn
- *Patterns
- *Tessellations
- *Iteration
- *Area
- *Angles

REPETITION

- *Ostinato
- *Canon
- *Variation
- *Rondo, binary and ternary forms
- *Echo rhythms and melodies

REPETITION

- *Aboriginal art
- *Wooden puzzles
- *Tessellations
- *Patterns
- *Jigsaw puzzles
- *Print making with a variety of objects
- *Rhythms in patterns

SYMMETRY

- *Reflection, rotation, translation
- *Printing
- *3D models
- *Symmetry in Nature
- *Construction and balance

SYMMETRY

- *Graphic Scores
- *Movement-mirror images
- *Dynamics and Pitch in symmetry
- (ASYMMETRY)**
- *Call and response
- *12 bar blues
- *Chorus/verse
- *Question and answer
- *Beat and rhythm

SYMMETRY

- *Origami
- *Snowflakes
- *Paper folding
- *Patterns
- *Faces : self portraits of artists; proportion of own faces;
- *Collage and wax resist of own faces
- *Christmas decorations

THE ABSURD

- *Topology
- *Mathematical oddities
- *Nonsense songs and literature
- *Puzzles
- *Networks / routes
- *Twist and turns

THE ABSURD

- *Nonsense songs
- *Onomatopoeic words
- *Fun with language
- *Stripsody
- *Improvisation
- *Aleatoric music

THE ABSURD

- *Using objects to tell a story
- *Puppetry
- *Masks
- *Face painting
- *Fancy dress costumes
- *Personality glasses

The students explored concepts associated with each 'Big Idea' over a fortnight. Tutorial sessions involved the same 'big idea' in mathematics, visual arts and music. Generally the response from the students was very positive. In discussion with the students about the subject, comments such as 'maths has come alive when seen in the context of the arts' were offered. When asked specifically about their understanding of how mathematical concepts could be taught through the arts, comments included:

- We learned so much about symmetry in music and art;
- Tessellations came to life in our art class;
- I suddenly saw how repetition was used so extensively in music;
- Mathematical shapes could be used in graphic notation in music and also in 3D and 2D visual arts activities;
- Creative packaging in art helped me learn more about 3D shapes in maths;
- Maths concepts in the arts helped show how the concepts can be used in the 'real' world, ie. other uses than mathematical;
- Doing visual arts activities using rolled paper and string art help me learn more about area;
- All sorts of patterns occur, not only in maths, but also in music and visual arts;
- This subject has made us more aware of how we can incorporate maths into music and art, eg. repetition in songs; symmetry in origami.

Students also commented that they could make effective use of the activities they had experienced in Curriculum Studies 4 in the classroom situation. Some students saw the links made between discipline areas as a creative way of reinforcing mathematical ideas in the primary classroom. Other students said that they enjoyed the different perspective to mathematics and that they felt it enhanced their creativity, and they had gained a better understanding of maths through hands-on arts activities.

But what about the drama part of the arts? Music and visual arts are both very important in the arts, but there are other components to be considered. Given the limited time for the subject (four hours per week), mathematics was allocated two hours each week and music and visual arts had one hour each. So there appeared to be no time for drama. Therefore another creative solution was devised.

In their tutorial groups, students were asked to plan, prepare and implement a production for primary children in the last teaching week of semester. The production could take the form of a short play, puppet theatre, musical items, dramatised poetry, mime, dance or similar item and should take between 20 and 45 minutes. The production was also expected to involve the university students in music, singing, playing instruments, improvisation, visual arts, design and the practical utilisation of mathematics.¹²

So throughout the semester students worked collaboratively to develop the production. Areas of stages were measured, backdrops were measured and painted, costumes were designed and made, dances were choreographed, scripts were written and practised, songs were learned, and overall production problems were discussed and solutions were devised. Then in the final teaching week of semester each tutorial group went out to a local school at a prearranged venue and time and presented their integrated arts production to a hall full of primary children. The students were as enthusiastic and excited about the production as were the pupils and their comments indicated that it had been a valuable learning experience. Students had been mainly self-directed with little assistance given from lecturers and had produced an energetic, integrated arts production which had utilised many mathematical concepts throughout the process of its development and presentation. For example:

- Measuring and building the stage scenery;
- Scripting and timing the performance
- Allocating tasks in an equitable fashion; and
- Positioning and operating the lights.

In the short term, the subject seems to have been effective in providing students with 'real' world learning experiences as they explored mathematical concepts through the arts. The long term issues are as yet unknown. Will the subject have inspired students to provide their pupils with these practical learning experiences and so raise the profile of the arts though integrating them with mathematics, a high priority subject? Or will their current enthusiasm for the subject wane when they hit the hard reality of schools in a low socioeconomic area with a high percentage of children from non-English speaking backgrounds, which tend to give the arts a low priority?¹³ One would hope that, despite the difficulties facing the arts in primary schools, at least some of these teacher trainees would be prepared to try a creative approach in their teaching, and use learning experiences in the arts to teach mathematical concepts. Their evaluations of this subject indicate clearly their willingness and confidence to 'have a go'!

-
1. N.Geoghegan, Unpublished MA Thesis, Macquarie University , Sydney. p. 17
 2. Commonwealth Department of Education, *Action : Education and the Arts*. Australian Government Publishing Service, Canberra, 1985. p. 28
 3. Minister for Education, NSW. *The Arts in Schools*. October 1974. P. 116
 4. Commonwealth Department of Education, 1985, p. 28
 5. Schools Commission, Australia Council. *Education and the Arts : NSW Report*. Canberra, 1977. P. 1
 6. M.Comte. *The Arts in Australian Schools : The Past Fifty Years*. *Australian Journal of Music Education*, Volume 1, 1988. p. 107
 7. Commonwealth Department of Education (1985), p. 34, 38
 8. D. Russell-Bowie. *The Policy and Practice of Music Education in NSW State Primary Schools*. Unpublished PH. D. Thesis, University of Wollongong, 1993.
 9. NSW Ministry of Education and Youth Affairs. *Excellence and Equity*. Sydney, 1989.
 10. UWS, Macarthur. *Subject Outline for Curriculum Studies 4*, 1993. p. 1
 11. UWS, Macarthur, 1993. pp. 2-3
 12. UWS, Macarthur. 1993. p. 18
 13. D. Russell-Bowie. 1993. pp. 222 - 223

MATCHING MUSICAL and MATHEMATICAL PATTERNS

Steven Nisbet, Griffith University

Abstract

The association between mathematics and music has been well documented for centuries, beginning with the work of the Greek mathematician and philosopher, Pythagoras. Further, there exists evidence suggesting that the number of people who are gifted in both mathematics and music is higher than expected. Some music educators have stated that children's participation in music programs improves their ability in other academic areas including mathematics. Are there cognitive processes common to both subject areas? This project is an investigation of the role of contour as a possible common element. It focuses firstly on the role of contour in the matching of melodic and visual contours, and secondly on the relationship between children's ability in mathematics and their ability in music. It investigates the effect of visual format, modality, contour complexity as well as ability on children's performance at matching melodies and visual contours, in the form of music notation and graphs. The results of the melody and visual contour matching tasks revealed that children (aged 10) with high music ability were more competent than those with low ability at tasks involving conventional music notation, but not at tasks involving non-conventional music notation. Modality condition and level of contour complexity were main effects for both types of matching (melodies and music notation and melodies and graphs). Also, there was a significant correlation between scores in mathematics and music, and between specific subscales of both tests.

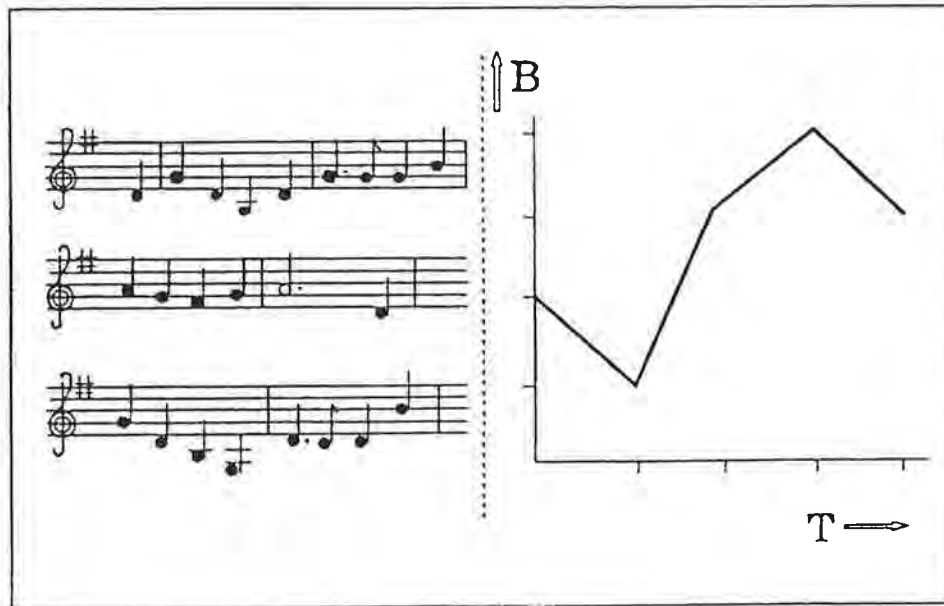
Introduction

Links between mathematics and music have been well documented for centuries. The Greek mathematician and philosopher, Pythagoras established that the pitch of musical notes was related to lengths of vibrating strings and organ pipes, and that simple mathematical ratios existed between resonating lengths for notes which harmonised. Since that time the study of acoustics and the production of musical sounds in instruments has progressed to the stage where the field is highly scientific, and mathematical modelling is very sophisticated. Not only are there people who study the mathematics and science of music, but also there exists anecdotal and research evidence indicating that there are those who are gifted in both mathematics and music. Browne (1987) has reported that the composition of some university orchestras is biased towards students majoring in science, engineering and mathematics fields (in contrast to arts and humanities). Among the top university orchestras in the USA is that of the Massachusetts Institute of Technology where some 80% of the members are students in these fields.

Educational research data on the 'spin-off' effect of developmental music education programs, such as the program developed by the Hungarian composer and teacher Zoltan Kodaly, have shown that participating primary school children improve in academic areas of mathematics (number, geometry and problem solving), reading comprehension and spelling, and general learning ability (Bridges, 1979; Herbert, 1973; Gregory, 1988). Why does this happen, and what links are there, if any, between children's understanding and skill in the two subjects? This research project investigates these questions. Further, the project has been prompted by a perceived relationship between a musician's interpretation of music notation and a mathematician's interpretation of graphs. Both interpretation processes involve abstraction of visual contour from their particular conventional frameworks. The former then requires a translation to knowledge of musical sounds, while the latter requires a translation to knowledge of the

mathematical context.

For instance in Figure 1, (i) What does the tune sound like? and (ii) What does the graph tell us?



: Samples of music notation and mathematical graphing.

Literature on Perceptions of Musical and Visual Patterns

The relationship between melodic and visual contour as perceived by children was studied by Morrongiello and Roes (1990). Five-year old and nine-year old children were asked to match visual contours to given nine-note melodies, and a number of significant factors emerged. Performance levels increased with age, but decreased with higher levels of contour complexity. Tonality (tonal versus atonal) was significant for nine-year olds but not for five-year olds, and musical training ensured better performance at the matching tasks.

The fundamental role of contour in melody recognition and melody discrimination has been well established. Dowling (1978) showed that the up-down contour of melodies plays the major role in recognition of musical stimuli. If the melodic contours are changed, subjects are able to recognise the melodies as being different (Bartlett and Dowling, 1980). Dyson and Watkins (1984) proved that contour changes were more easily identified if they occurred at contour reversal points. In a study of children's perception of melodies, Pick et al (1988) found that subjects were able to discern similarity between melodies that had the same contour but had changes in intervals between notes within the melodies. Cross-modal and intramodal matching of melodic and visual contours has been investigated by Balch and Muscatelli (1986). Key factors emerging from the study were rate of presentation, modality, and musical experience. For both low and high music experience groups, intramodal visual > visual recognition was best, followed by recognition in both cross-modal conditions (visual > auditory and auditory > visual) and last was the auditory > auditory condition. This result and the interaction between presentation rate and modality gives rise to the contour abstraction

hypothesis which maintains that up-down contour abstraction for visual presentation is more efficient than for auditory presentation.

Purpose of the Study

The purpose of the study was to investigate children's performance at matching melodies with music notation and mathematical graphs in relation to their abilities in mathematics and music. The role of musical and mathematical training was to be further investigated by contrasting performance with conventional materials with performance with non-conventional materials. It was hypothesised that children with more ability in music would be more competent with the conventional notation, and that the use of non-conventional notation would reduce performance levels. Similarly, it was hypothesised that non-conventional graphs would reduce the performance levels of mathematically able children. The influence of contour complexity was to be studied by having materials of two levels of complexity, high and low. The study was designed to test the contour abstraction hypothesis by analysing differences in performance between the various modality conditions -melody > visual, visual > melody, visual > visual and melody > melody.

Method

Subjects:

One hundred and one children in Year 5 (aged between 10 and 11) at two regular suburban state schools were used as subjects. All children underwent the set of tests in mathematics ability and music ability, but were split into two groups (50 and 51) for the two separate sets of matching tasks (melodies with music notation, and melodies with graphs).

Materials:

The mathematics ability test was a written test which consisted of 25 multiple-choice items on three topics which reflected elements common to both disciplines, namely, number patterns, measurement of length and interpreting graphs. These topics are regarded also as essential components of a contemporary primary school mathematics program according to Australian Education Council (1990) and the National Council of Teachers of Mathematics (1989). The items were adapted from items included in standardised tests produced by the Australian Council for Educational Research (1974). All items of the mathematics test were completed in a class situation. Questions were also read out aloud to the children so that any with reading difficulties were not disadvantaged in this way. The music ability test was a composite written and aural test of 25 items based on items from the musicianship syllabus and practical aural tests produced by the Australian Music Examinations Board (1991). Some items were multiple choice response, the others short answer. Approximately half of the items in the test were completed in a class situation and the remainder were done on an individual basis. Items were read out aloud also, as with the mathematics test. Information was also collected about the children's music experience (instrumental and choral), and their levels of performance in other school subjects (language arts, social studies and science).

The matching task tests each consisted of 42 items requiring subjects to match (i) a 9-note melody with music notation or graph (auditory>visual), (ii) music notation or graph with a 9-note melody (visual>auditory), (iii) music notation or graph with music notation or graph (visual>visual), and (iv) melody with melody (auditory>auditory). Melodies were of low complexity (1 contour change) or high complexity (3 contour changes) and were played on a Sony portable audio cassette player placed adjacent to the subject. The melodies had been recorded directly from a Yamaha PSR7 keyboard using the familiar piano sound on the keyboard. Visual materials (samples of single line music notation or line graphs) were printed black on white paper, and were placed on the desk in front of

the subject. Music notation in the matching task test was presented in conventional format (standard crotchets on a horizontal five-line staff, read from left to right), and also in non-conventional format (triangle shapes on a four-line vertical staff, read from top to bottom). Conventional graphs consisted of connected lines segments (none points) with up-down contour changes read from left to right. Graphs of the non-conventional variety, however, were to be read from top to bottom, with corresponding up-down contour of melody represented by left-right movement (low on the left and high on the right).

The experiment was a 2 x 3 x 2 factorial design (2 formats x 3 modality conditions x 2 complexity levels). The inclusion of items of the fourth modality condition (auditory>auditory) allowed comparison across all four conditions, giving a supplementary framework for analysis of results, namely 4 modality conditions x 2 complexity levels).

Table 1: Design A (2 formats x 2 complexities x 3 modalities)

Format	Complexity	Modality		
		Mel-vis	Vis-Mel	Vis-Vis
Conventional	Low	Cell 1	Cell 3	Cell 5
	High	Cell 2	Cell 4	Cell 6
Non-Conventional	Low	Cell 7	Cell 9	Cell 11
	High	Cell 8	Cell 10	Cell 12

Table 2: Design B (2 complexities x 4 modalities)

Format	Complexity	Modality			
		Mel-vis	Vis-Mel	Vis-Vis	Mel-Mel
Conventional	Low	Cell 1	Cell 3	Cell 5	Cell 13
	High	Cell 2	Cell 4	Cell 6	Cell 14

In the matching task tests, the following procedure was carried out with each child. For the melody>visual modality condition, a 9-note melody was played on a cassette player to the child, and then a 9-note sample of music notation (or a 9-point connected line graph) was shown. The question was asked, 'Is this music (or graph) the same as the melody you have just heard, or is it different?' In the visual>melody modality condition, a 9-note sample of music notation (or a graph) was shown to the child for approximately 5 seconds (long enough for the child to indicate that he/she had noted its features), and, after the page was turned, a 9-note melody was played. The child was asked, 'Was that melody the same as the music (or graph) on the page before, or different?' In the visual>visual modality condition, a 9-note sample of music notation (or graph) was shown to the child, then the page was turned to reveal another sample of notation (or graph). The child was asked if the two samples of music notation (or the two graphs) were the same or different. In the melody>melody condition, two 9-note melodies were played consecutively and the child was asked if the two melodies were the same or different. At the end of the session the child was asked what strategy he / she used to remember the melodic and visual contours, and determined if they matched or not.

Results

Ability tests:

Factor analysis of the mathematics ability test confirmed the three original test sections as subscales: interpretation of graphs, measurement of length, and number patterns. However, the music test revealed three subscales musical performance, notation skills, and aural skills. These scales are process and skill related rather than topic related.

There was a significant and positive correlation between mathematics and music scores ($r = 0.42$, $p = 0.001$), but this no more significant than the correlations between mathematics and music with other school subjects. See r values below. ($p \leq 0.001$, $n=101$ for all values)

	Music	Mathematics
Mathematics	0.42	
Language	0.44	0.55
Social Studies	0.46	0.44
Science	0.45	0.51

Matching tasks - melodies and music notation:

Analysis of the results revealed that format was not a significant main effect, indicating that overall there was no difference in performance between items in conventional and non-conventional format. However there were two significant main effects: modality and complexity. Children were more successful at intramodal tasks than cross-modal tasks: the order of success being (from high to low) visual>visual > visual>melody > melody>visual and melody>melody = visual>visual. Performance dropped significantly as complexity increased from low to high. An interaction between modality and complexity indicated that cross-modal task performance drops more as complexity increases than for intramodal task performance. There was a significant interaction between format, modality and complexity revealing that task performance depended significantly on the status of each of the three variables. There were some combinations which produced performance no better than chance level, for example conventional format, high complexity, melody>visual modality.

Music ability was a significant factor with performance at conventional format items and for melody>visual items. Further, there was a significant interaction between format, modality and modality. Music experience was a significant factor for low complexity items, and for test aggregate scores. Mathematics ability appeared to play little part in matching task performance.

Matching tasks - melodies and graphs:

Contrary to the results for melodies and music notation, format was a significant main effect for matching melodies and graphs. Modality also was a significant main effect with intramodal tasks showing higher levels of performance than cross-modal tasks: the order of success being (from high to low) visual>visual > melody>melody > visual>melody > melody>visual. Complexity was another significant main effect, and it also had different effects in each of the modality conditions, as well as in each format, as indicated by significant interactions.

Mathematics ability was a significant factor in the performance of melody>visual items, but not for any other class of matching tasks (even though mathematical graphs were used as one of the matching halves). However musical ability was a significant factor for conventional items and for high complexity items. Further, music experience was a significant factor for conventional items, low complexity items, high complexity items, and for melody>visual items. Music experience also interacted significantly with format x complexity, modality x complexity, and with the test aggregate score. The importance of music ability was reinforced by the significance of aural scale scores for non-conventional items, low complexity items, the interaction of format x complexity, and for test aggregate scores.

Children's descriptions of strategy:

The children generally agreed about how they remembered the melodic and visual contours, and determined whether they were the same or different. With the melody

>visual items, they said that they could remember the up/down shape of the melody and the actual notes of the tune, along with the first and last notes. Some musical children could see the shape of the tune in their minds from hearing the melody. With the visual >melody items, again they could remember the shape (for example, 'like a W'), kept a mental picture, and checked the melody note by note. Some musical children could hear the tune in head, just by looking at the visual contour. With the visual >visual items they again could remember the overall shape, in particular the beginning and the end, and could keep a mental picture of the contour. With the melody > melody items, they said that they could keep the tune in their minds, however the presentation of the second melody often wiped the memory of the first melody. Many children reported that the task was very difficult when there were 'too many ups and downs'.

Most children noted that the non-conventional format of music notation was harder to read than the conventional format because 'it was opposite to normal way', but noted that the non-conventional graphs were no more difficult than the conventional graphs. Results showed that music notation format had more influence in the high music group than the low group. In the melodies and graphs test, results showed similar levels of performance for visual>visual tasks, but with cross-modal tasks, performance deteriorated with the introduction of non-conventional graph format.

Discussion

The confirmation of the results from Morrongiello and Roes (1990) that the high music group was better at matching with conventional music notation than the low music group, for both graphical contours (as investigated by Morrongiello and Roes) and also for music notation is significant in that it validates the methodology of this study. It is significant also because it offers further evidence for the ability of children to extract contour features from melodies. The matching task superiority of the high music group and the high music notation scale group indicates that children's ability to match melodies to visual contours is directly related to their ability to read conventional music notation.

Morrongiello and Roes (1990) postulated that one reason that musical training was a significant factor in the matching of melodies and visual contours was that it facilitated a listener's encoding and memory for musical material. Further, they found that the musically trained children focused more on the up / down contour of the visual material by nodding their heads or moving a finger along the line. Hence it was postulated in this study that the musically able children would be more likely to have had experience with reading the up / down contour of conventional music notation. The results of this experiment do provide evidence that this is the case. Although there was no interaction between format and music group, the advantage held by children in the high music score group is demonstrated by the performance differences on conventional format tasks, and by the correlation between conventional format task performance and music score. The fact that no correlation existed between non-conventional format task performance and music ability demonstrates that musically experienced children, when faced with a different format of music notation, no longer have the advantage of familiar music notation.

The influence of contour complexity noted in this experiment corresponds with the results of Morrongiello and Roes (1990) in that complexity was a main effect for matching tasks involving music notation overall and for matching tasks involving graphs overall. Further the interaction between complexity and music ability on matching tasks involving graphs corresponds with the results of Morrongiello and Roes. However, there was no such interaction on matching tasks involving music notation, where increasing complexity produced a decline in performance in both high and low music groups. The reason for this may lie in the difference between the music notation and graphs used in the experiment. A contour presented in music notation form contains more detail (in the form of musical staff, clef, notes and stems) and hence is more information dense than a simple line graph plotted relative to two perpendicular axes.

The findings of this experiment support previous findings that cross-modal tasks are more difficult than intramodal tasks, in particular with auditory and visual modalities (Birch and Belmont, 1964). Further, the asymmetry of the cross-modal task results (visual-melody tasks easier than melody-visual tasks) is in keeping with that of Bryden (1972).

Analysis of the results pertaining to modality condition raise doubts about the validity of the contour abstraction hypothesis (Balch and Muscatelli, 1986). The findings indicate firstly that the hypothesis holds only under certain conditions and secondly that the superiority of intramodal tasks with respect to cross-modal tasks takes precedence over the contour abstraction hypothesis. The interaction between modality and complexity further demonstrates the greater difficulties subjects experience with cross-modal tasks, especially as the tasks become more complex. The fact that the hypothesis does not hold for music notation intramodal tasks, i.e. visual to visual and melody to melody matching, may be explained by the difference in the nature of the visual materials in the two experiments. Music notation is a more sophisticated system of visual symbols than the contour markers used by Balch and Muscatelli, and the visual to visual matching process for music notation requires a more complicated encoding process, given the greater density of visual information in music notation (staff, clef, notes and stems) as noted earlier.

The positive effect of music ability on task performance overall and performance at melody to visual matching tasks in particular corresponds with the results of Morrongiello and Roes (1990) and Balch and Muscatelli (1986) that contour matching was performed better by musically trained subjects than by those untrained. However the results in the other three modality conditions showed no significant differences between music groups and no correlations with music ability score. Such findings conform with those by Vande Voort, Senf and Benton (1972) and Goodnow (1971) who concluded that it was not modality per se that matters, but modality experience. Musically trained children have had more experience than musically untrained children in reading music and hence more experience in associating a melody with its corresponding musical notation.

The evidence from this study demonstrates that musical ability rather than mathematical ability is a significant factor in determining matching task performance levels, for both visual forms, music notation and graphs. The significant differences in performance at conventional format items between high and low groups based on notation scale scores indicate that the subjects in the high notation scale group may perceive a correspondence between the contour in regular music notation and the contour of a graph. The fact that mathematics ability is not a significant factor for the matching of melodies and graphs, may be due to the fact that children, although varying in ability, spend equivalent amounts of time doing mathematics at school. In contrast, the time spent on musical pursuits varies greatly from child to child. In the sample of Year 5 children, some children learned two instruments, practiced daily, and sang in the school choir, but there were others whose musical activity only entailed playing the recorder in class for 15 minutes per week. This leads to musical children's superior accuracy at perceiving melodic and visual contours and abstracting contour features.

The fact that the correlation coefficient for mathematics and music, although significant, is either comparable to or less than the coefficients for other pairs of school subjects, puts the proposed connection between mathematics and music into perspective, in that it is no more special than other inter-discipline connections. Nevertheless, one comment can be made about the spread of scores in mathematics and music. The fact that those children who scored highly in music scored at an above average level in mathematics (and not the reverse) suggests that above average ability in mathematics may be a pre-requisite to high ability in music.

In relation to the inter-correlation of school subjects, this may be seen on one hand as evidence supporting the notion of a general intelligence factor (Spearman, 1927) which has an influence on children's achievement in all disciplines. However the strengths of

the correlations indicate that only a proportion of the variance can be explained by such a general association between subjects. On the other hand, it could be argued that the results support Thurstone's postulation of a set of primary abilities (1938), or the theory of multiple intelligences (Gardner, 1983), in which musical ability, logico-mathematical ability and spatial ability are postulated as three of the seven separate intelligences identified. It is not intended to continue the 'general intelligence' debate on this issue here given the small amount of relevant data collected in this study.

Returning to the association between mathematics and music, it was surprising that the correlation between graphical interpretation scores and music notation scores (as tested in hypothesis 13) was not greater than that obtained for music and mathematics aggregate scores, even though the former was positive and significant. Underlying hypothesis 13 was the idea that the association between achievement in music and achievement in mathematics was attributable in part to a perceived similarity between the musical skill of interpreting music notation and the mathematical skill of interpreting a graph. Hence it was expected that the two components of the respective tests would be more strongly correlated than the aggregate scores. That not being the case, questions arise about other aspects of mathematical and musical skills which could contribute to the association between music ability and mathematical ability. Another question is - what characteristics of the various melody-visual matching tasks have an effect on performance level, and therefore link performance with musical ability?

One characteristic worth investigating in the future is the type of cognitive processing called into play in the various melody-visual matching tasks, i.e. cognitive processing involved in perception of melodic and visual contour. A simultaneous and successive cognitive processing model (Naglieri and Das, 1990) allowed for a distinction between (a) the processing of stimuli in which component parts can be interrelated and are surveyable at any one time (simultaneous processing), and (b) the processing of stimuli in which the elements form a chain-like progression (successive processing). (A similar classification of cognitive processing has been devised by Paivio (1971) in relation to verbal systems, which describes sequential and parallel processing, sequential - because of the sequences of words in sentences, and parallel (simultaneous) because sentences are integrated units.)

In regard to the matching tasks investigated in this study, the presentation of visual materials (music notation or graphs) suggests that simultaneous processing would be employed by the subject, whereas the presentation of a melody (note by note) suggests that successive processing would be required. Hence it would be appropriate to conduct future research into the simultaneous and successive cognitive processing involved in the extraction of contour features from melodies and visual materials (music notation and graphs) and also to investigate the relationship between children's cognitive processing and their abilities in music and mathematics.

References

- Australian Council for Educational Research. (1974). *ACER Mathematics Tests (AM Series)*. Hawthorn, Victoria: Australian Council for Educational Research
- Australian Education Council. (1990). *National Statement on Mathematics for Australian Schools*. Melbourne: Curriculum Corporation for AEC.
- Australian Music Examinations Board. (1991). *Manual of Syllabuses*. AMEB.
- Balch, W. & Muscatelli, D. (1986). The interaction of modality condition and presentation rate in short-term contour recognition. *Perception and Psychophysics*, 40 (5), 351-358.

- Bartlett & Dowling. (1980). Recognition of transposed melodies: A key distance effect in developmental perspective. *Journal of Experimental Psychology: Human Perception and Performance*. 6, 501-515.
- Birch, H.G. & Belmont, L. (1964). Auditory-visual integration in normal and retarded readers. *American Journal of Orthopsychiatry*, 105, 173-179.
- Bridges, D. (1979). Outcomes of a developmental music program. *Paper presented to the Fourth International Kodaly Symposium*. Sydney: 1979.
- Browne, M. (1987). The intimate links between music and the lab. In *Why Music is Basic*. Queensland Department of Education.
- Bryden, M.P. (1972). Auditory-visual and sequential spatial matching in relation to reading ability. *Child Development*, 43, 824-832.
- Dowling, W.J. (1978). Scale and contour: Two components of a theory of memory for melodies. *Psychological Review*, 85, 341-354.
- Dyson, M. and Watkins, A. (1984). A figural approach to the role of melodic contour in melody recognition. *Perception and Psychophysics*, 35 (5), 477-488.
- Gardner, H. (1983). *Frames of mind: The Theory Of Multiple Intelligences*. New York: Basic Books.
- Gregory, A.S. (1988). The effects of a musical instructional technique on a mathematical achievement of third grade students. *Doctoral Dissertation*. University of Alabama.
- Goodnow, J.J. (1971). Matching auditory and visual series: Modality problem or translation problem?, *Child Development*. 42, 1187-1201.
- Herbert, G. (1973). Cited in Bridges, D. (1979) Outcomes of a developmental music program. *Paper presented to the Fourth International Kodaly Symposium*. Sydney: 1979.
- Morrongiello, B. and Roes, C. (1990). Developmental changes in children's perception of musical sequences: Effects of musical training. *Developmental Psychology*. 26 (5), 814-820.
- Naglieri, J.A. and Das, J.P. (1990). Planning, attention, simultaneous and successive (PASS) cognitive processes as a model for intelligence; *Journal of Psycho-educational Assessment*, 8, 303-337.
- National Council of Teachers of Mathematics (1989). *Curriculum and Evaluation Standards for School Mathematics*. Reston, Virginia: NCTM.
- Pavio, A. (1971). *Imagery and Verbal Processes*. New York: Holt, Rinehart and Winston Inc.
- Pick, A., Palmer, C., Hennessy, B. (1988). *Journal of Experimental Child Psychology*. Vol.45, pp.28-51.
- Spearman, C. (1927). *The Abilities of Man*. New York: Macmillan.
- Thurstone, L.L. (1938). *Primary Mental Abilities*. Chicago: University of Chicago Press.
- Vande Voort, L. Senf, G. & Benton, A. (1972). Development of audio-visual integration in normal and retarded readers. *Child Development*, 43, 1260-1272.

AMEL CONFERENCE PROGRAM 1993

TIME	TOPIC	PRESENTER
Sunday 26th September		
8.30-9.15	Conference Registration	
9.15-9.30	Opening of Conference	Jane Southcott, Chair of AMEL
9.30-10.30	Session 1- Chair, Dr Deirdre Russell-Bowie Resolving the dilemmas of classroom music teaching.	Noela Hogg
10.30-11.00	Morning Tea <u>Menu</u> Danish Pastries Tea and Coffee	
11.00-11.30	Session 2 - Chair, Jane Southcott How much influence do and should primary and secondary schools have in shaping musical performance?	Nita Temmerman
11.30-12.00	New directions for better or for worse?: The relationship between personal musical competency and student teachers' confidence and ability in teaching music.	Dr Deirdre Russell-Bowie
12.00-12.30	The National Arts Curriculum: The next three years.	Joan Livermore
12.30-1.30	Lunch, Waterways Resort <u>Menu</u> Fish of the Day & Salad Tea, Coffee, Orange Juice	
1.30-2.30	Session 3 - Chair, Noela Hogg Keynote Address - Bitter Sweet: The broad context of research and music education in Australia.	Professor Millicent Poole
2.30-3.00	Focussing the research effort	Professor Barbara van Ernst.
3.00	Afternoon Tea <u>Menu</u> Carrot Cake Tea and Coffee	
4.30-6.30	Cruise on the Ferryman <u>Menu</u> Homemade Patè & Biscuits A variety of Cheeses, Salamis, Olives, Nuts and Dried Fruits, Chicken & Asparagus Vol-au-vents.	

Monday 27th September		
8.30-9.00	Day Registration	
9.00-9.30	Session 4 - Chair, Max Reeder Top notes in the Country (Access to music by regional communities): The role and responsibility of the music educator.	Megan Cavanagh-Russell
9.30-10.00	Performing arts opportunities for schools: Statewide perspectives in a school-centered system.	Alan Suthers
10.00-10.30	Watching Paint Dry: Musical meaning in a military ceremony (1) (2).	Roland Bannister
	Morning Tea <u>Menu</u> Fresh Scones, Jam and Cream Tea and Coffee	
10.30-11.00	Session 5 - Chair, Megan Cavanagh - Russell	
11.00-11.30	Music as a vehicle of reform in 19 Century educational movements.	Jane Southcott.
11.30-12.00	Nurturing creativity: Music play for children under 2.	Louie Suthers
12.00-12.30	Young childrens' creative music thinking: developmental or random?	Max Reeder
12.30	Lunch <u>Menu</u> Spezzatino (veal pieces cooked with onions served with a red sauce) & Salad. Tea, Coffee, Orange Juice.	
	Afternoon Free	
6.30 - 7.00	Conference Dinner- Waterways Resort <u>Menu</u> Chef's Homemade Pumpkin Soup Trio of Pasta (all that can be eaten). Traditional Italian Veal Parmigiana OR Chicken Cacciatori served with Garden Fresh Seasonal Vegetables Tea, Coffee, After Dinner Mints, Dessert - Fresh Fruit Salad & Cream or Tartufo.	

Tuesday 28th September		
8.30-9.00	Day Registration	
	Session 6 - Chair, Dr Edward Gifford	
9.00-9.45	Investigating assessment alternatives: a computer interactive music test.	Jennifer Bryce
9.45-10.30	Up the publication road.	Professor Royce Sadler
10.30-11.00	Morning Tea <u>Menu</u> Apple Strudel Tea and Coffee	
	Session 7 - Chair, Professor Barbara van Ernst	
11.00-11.30	Generative processing in the acquisition of keyboard performance skills.	Vanda Weidenbach
11.30-12.00	Pandora in the 90's	Maree MacMillan
12.00-12.30	Students as novice composers: Designing the research.	Carol Biddiss
12.30-1.30	Lunch <u>Menu</u> Margaretta Matriciana Tea, Coffee, Orange Juice	
1.30-2.00	Session 8 - Chair, Vanda Weidenbach Pre-service primary teacher's perceptions of what makes a good music teacher.	Dr Edward Gifford
2.00-3.00	Open Forum - Vanda Weidenbach and Professor Barbara van Ernst The identification of essential musical skills and knowledge for the pre-secondary teacher and the implications for research.	
3.00-3.30	Afternoon Tea <u>Menu</u> Banana Cake Tea and Coffee	
3.30 - 4.30	Session 9 - Chair, Nita Temmerman	
3.30-4.00	Maths and music: A creative partnership.	Dr Deirdre Russell-Bowie
4.00-4.30	Matching musical and mathematical patterns	Steve Nisbet
6.30-7.00	Dinner at Squatters Restaurant	

Wednesday 29th September		
9.00-10.30	Open Forum - Chair, Barbara van Ernst Conference Review and Submission.	
10.20-11.00	Morning Tea <u>Menu</u> Assorted Slices Tea and Coffee	
11.00-12.00	AMEL Annual General Meeting	
12.00	Lunch and Close <u>Menu</u> Chicken & Mushrooms & Salad Tea, Coffee, Orange Juice.	

Up the publication road - Professor Royce Sadler, Dean, Faculty of Education, Griffith University.

The session provided an introduction to the world of academic publishing, particularly in high quality scholarly journals. The intention was to explain to participants how the system works and how to make it work for them.

The presentation touched on some of the following: the importance of publishing, techniques for developing a writing and publishing program, the relation between research theses and publications, finding a topic to write about, the style of publishable manuscripts (including technical considerations), deciding on the best journal preparing the manuscript for the journal, submission protocols, seeing the article through the publication, coping with rejections, balancing consultancy or professional writing with strictly academic writing, and converting conference papers to articles.

This paper has not been published in these proceedings. However, Professor Sadler's book, 'Up the Publication' Road may be obtained from Professor Sadler, Dean, Faculty of Education, Griffith University, Nathan, Queensland 4111.

**PARTICIPANTS
AMEL CONFERENCE 1993**

<p>Carol Biddiss 1 Beach St GRANGE 5022</p> <p>Pam Burnard 15 Bardon Esp BARDON QLD 4065</p> <p>Jennifer Bryce ACER PO Box 210 HAWTHORN VIC 3122</p> <p>Mr Roland Bannister Charles Sturt University Riverina PO Box 588 WAGGA WAGGA NSW 2650</p> <p>Ann Carroll Visual and Performing Arts Unit Queensland Department of Education PO Box 33, North Quay, BRISBANE Q 4001</p> <p>Megan Cavanagh-Russell PO Box 215 DEVONPORT 7310 TAS</p> <p>Rhonda Davidson-Irwin 140 Livesay Rd MOGGILL QLD 4070</p> <p>Helene Field 34 Wendell St NORMAN PARK QLD 4170</p> <p>Dr Edward Gifford Faculty of Education, Griffith University NATHAN QLD 4111</p> <p>Noela Hogg 149 Fordham Ave HARTWELL VIC 3214</p> <p>Mr Don Kay Conservatorium of Music University of Tasmania at Hobart GPO Box 252C HOBART TAS 7001</p> <p>Assoc. Prof. Laurie Lepherd School of Arts University of Southern Qld. PO Box Darling Heights TOOWOOMBA 4350</p> <p>Joan Livermore 54 Parkhill St PEARCE ACT 2604</p>	<p>Maree MacMillan 3 Jarvie St EAST BRUNSWICK VIC 3057</p> <p>Steve Nisbet Faculty of Education, Griffith University NATHAN QLD 4111</p> <p>Prof Millicent Poole Pro Vice Chancellor, Research & Advancement QUT- 2 George St QLD 4000</p> <p>Max Reeder 18 Ophir St BATHURST NSW 2795</p> <p>Dr Deirdre Russell-Bowie University of Western Sydney Macarthy Campus PO Box 555 CAMBLETOWN NSW 2560</p> <p>Professor Royce Sadler Dean, Faculty of Education Griffith University QLD 4111</p> <p>Jane Southcott Monash University College Gippsland Switch back Road CHURCHILL VIC 3842</p> <p>Alan Suthers Manager, Performing Arts NSW Dept of School Education ERSKINEVILLE NSW 2043</p> <p>Louie Suthers 10 Clive Rd EASTWOOD 2122</p> <p>Astrid Schummy Faculty of Education Griffith University QLD 4111</p> <p>Nita Temmerman University of Wollongong Faculty of Education North Fields Avenue WOLLONGONG NSW 2519</p> <p>Prof. Barbara van Ernst 45 Mayston St HAWTHORN EAST 3123</p> <p>Vanda Weidenbach UWS Nepean PO Box 10 KINGSWOOD NSW 2747</p>
--	---

